

The Effect of War  
on  
Currency and Deposits

CHARLES R. WHITTLESEY

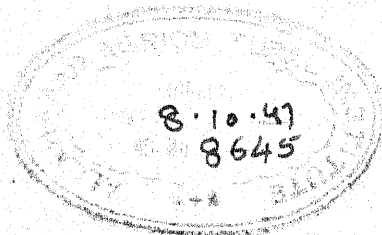


*OUR ECONOMY IN WAR*

Occasional Paper 11: September 1943

NATIONAL BUREAU OF ECONOMIC RESEARCH

1819 Broadway, New York 23



COPYRIGHT, 1943, BY NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.  
1819 BROADWAY, NEW YORK, N. Y. ALL RIGHTS RESERVED

MANUFACTURED IN THE UNITED STATES OF AMERICA BY

THE ACADEMY PRESS, NEW YORK, N. Y.

## Preface

THIS PAPER is the third in the National Bureau series entitled "Our Economy in War" and the second prepared by Dr. Whittlesey.

The special studies in the series dealing with the effect of war on banking, prepared under the Financial Research Program, have been made possible by grants from the Association of Reserve City Bankers and the Rockefeller Foundation.

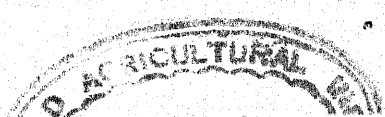
The present paper, *The Effect of War on Currency and Deposits*, is on a subject of vital interest to every citizen. It provides measures of the growth of the circulating medium since the outbreak of war; explains the processes, long familiar to students of money and banking, by which this growth has been brought about; considers the problem of the ownership of the increase in circulating medium; reviews ways in which currency and deposit expansion may occur in a period such as the present; and relates the wartime expansion of currency and deposits to the question of wartime inflation. The objective of the study is to provide perspective for consideration of wartime and postwar monetary developments in the United States and to indicate problems that may press for solution.

A preliminary draft of the study was circulated for technical criticism to a number of individuals cooperating in the Financial Research Program. The present study has benefited from their many suggestions.

Dr. Whittlesey is Professor of Finance and Economics in the Wharton School of Finance and Commerce of the University of Pennsylvania and Economic Consultant to the Penn Mutual Life Insurance Company. As in his earlier study, *The Banking System and War Finance*, he was assisted by Edith Elbogen and Willis J. Winn, both research associates of the Financial Research Program. Dr. Lorine Pruette was in charge of editing the manuscript.

RALPH A. YOUNG  
*Director, Financial Research Program*

September 1943



## Contents

THE GROWTH OF CURRENCY AND DEPOSITS	2
<i>Changes in the Volume of Circulating Medium</i>	2
<i>Changes in Composition of the Circulating Medium</i>	4
<i>Time Deposits</i>	7
<i>Differences by Location and Class of Bank</i>	8
HOW THE QUANTITY OF CIRCULATING MEDIUM CHANGES	12
<i>The Volume of Currency</i>	12
<i>The Volume of Demand Deposits</i>	13
<i>Factors in the Wartime Expansion of Deposits</i>	17
WHAT BECOMES OF THE INCREASED CIRCULATING MEDIUM?	19
<i>Use of the Circulating Medium</i>	19
<i>The Increase in Deposits</i>	20
<i>The Relative Growth of Currency</i>	24
ALTERNATIVE METHODS OF MONETARY EXPANSION	28
<i>Borrowing from Banks vs. the Issue of "Greenbacks"</i>	28
<i>Borrow-and-Buy vs. Direct Borrowing from Banks</i>	29
<i>Treasury Borrowing from Federal Reserve Banks</i>	31
MONETARY EXPANSION AND THE PROBLEM OF INFLATION	32
<i>The Bases of Inflation</i>	32
<i>Characteristics of Recent Price Behavior</i>	34
<i>The Problem of Liquid Resources</i>	38
IN CONCLUSION	42
ADDENDUM: MONETARY EXPANSION TO JUNE 1943	45

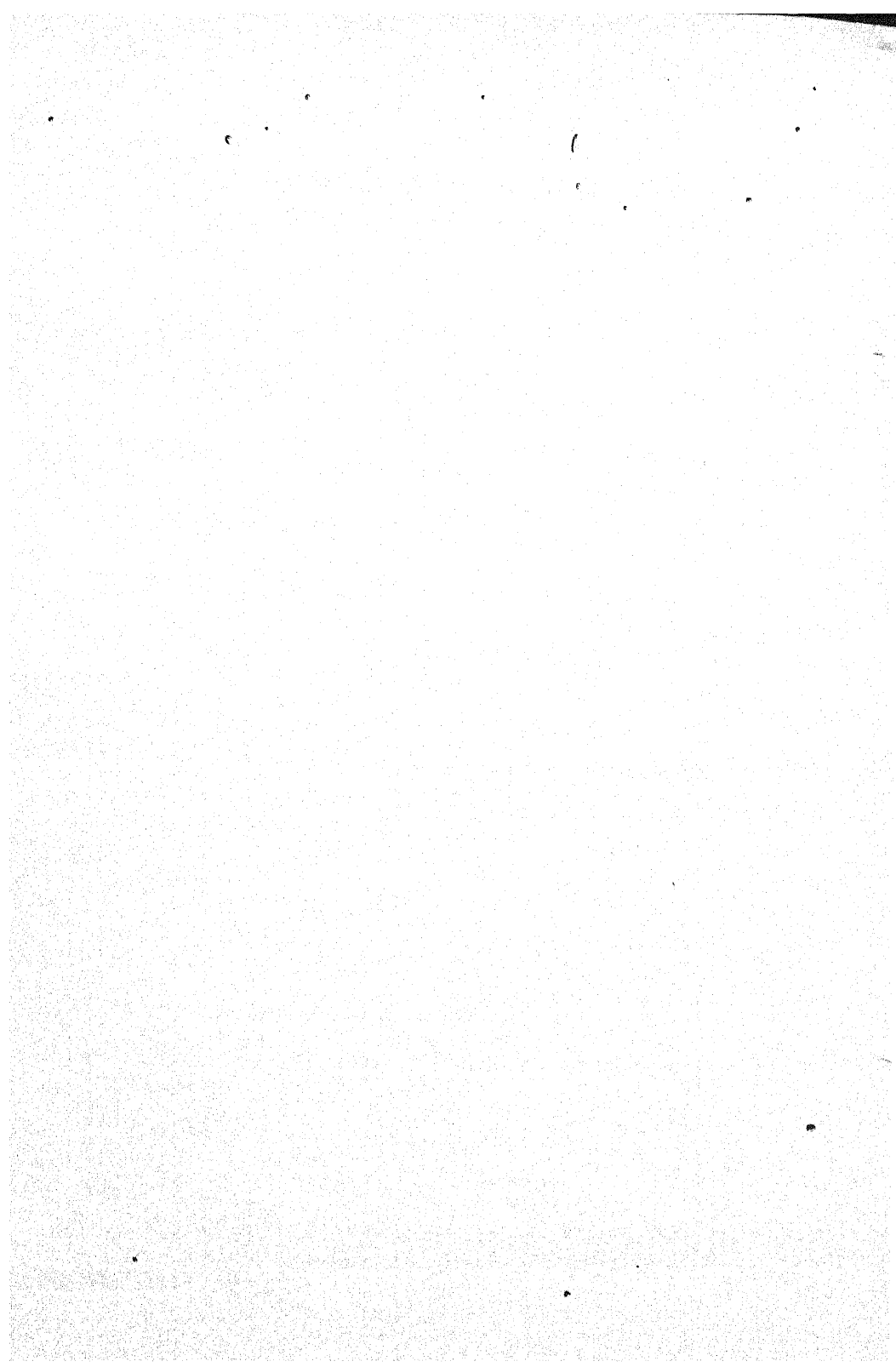


## Tables

1 COMPOSITION OF CIRCULATING MEDIUM AND TIME DEPOSITS, WORLD WARS I AND II	5
2 PERCENTAGE INCREASE IN DEMAND DEPOSITS OF FEDERAL RESERVE MEMBER BANKS, AND PERCENTAGE DISTRIBUTION, JUNE 1939 TO DECEMBER 1940, BY FEDERAL RESERVE DISTRICTS	8
3 PERCENTAGE INCREASE IN DEMAND DEPOSITS OF FEDERAL RESERVE MEMBER BANKS, JUNE 1939 TO DECEMBER 1942, BY FEDERAL RESERVE DISTRICTS	10
4 CHANGES IN FACTORS RELATED TO GROWTH OF DEMAND DEPOSITS, 1939-42	18
5 INDEXES OF SALES OF RETAIL STORES	26
6 INDEXES OF COST OF LIVING AND OF PRINCIPAL COMPONENT ITEMS IN SELECTED CITIES, DECEMBER 1940, 1941, 1942	37

## Charts

1 TOTAL CIRCULATING MEDIUM, WORLD WARS I AND II	3
2 WAR CONTRACTS AND INCREASE IN DEMAND DEPOSITS OF NATIONAL BANKS, BY REGION, JUNE 1940 TO DECEMBER 1942	9
3 DEMAND DEPOSITS IN NATIONAL BANKS, BY REGION, WORLD WARS I AND II	11
4 WHOLESALE PRICES AND THE CIRCULATING MEDIUM, WORLD WARS I AND II	35



## The Effect of War on Currency and Deposits

THE AMOUNT OF MONEY in circulation in the United States doubled during the three and a half years ending in 1942. The addition to the supply of circulating medium<sup>1</sup> in this brief space of time was greater than the total increase in the preceding century and a half. The quantity of greenbacks authorized during the Civil War amounted to \$450 million. In every month from August to December 1942 inclusive, the net increase in currency outstanding was more than this total. During the second half of 1942 currency outside the Treasury and Federal Reserve Banks increased by over \$3 billion. In addition, there was an even larger increase in demand deposits, amounting in these six months to a total of \$7.2 billion.

The first World War was also a period of great monetary expansion. In the six years from the end of June 1914 to the end of June 1920 the circulating medium of the United States increased by 102 percent. The increase in the three and a half years ending in 1917 was approximately 36 percent as compared with 109 percent in the three and a half years ending in 1942. The over-all price effect of deposit inflation in the last war was not

<sup>1</sup> The word *currency* will be employed to describe common money such as is now legal tender in the United States; it consists chiefly of coins, silver certificates, United States notes, and Federal Reserve notes. *Currency in circulation* represents the total amount of currency issued, less the amount held in the Treasury, in the Federal Reserve Banks (including that held by Federal Reserve agents), and in the vaults of banks in the United States, Alaska, and the island possessions. Unless otherwise stated, currency will refer exclusively to currency in circulation. (This is not identical with the series for currency in circulation published by the Treasury, which includes cash in the vaults of banks.) *Total deposits* consists of all demand, time, and savings deposits as reported by the Comptroller (with adjustment for float and interbank deposits), United States deposits in the Federal Reserve Banks, certified and cashiers' checks, and deposits in postal savings banks and school banks. *Circulating deposits and currency* consist of total deposits and currency in circulation less time deposits and demand certificates of deposits. The terms *circulating medium*, *money*, and *money supply* are used interchangeably with circulating deposits and currency. The terminology adopted here is in accord with general usage. By some writers the expression money is restricted to currency only and by others is extended to include time deposits and other liquid assets.

materially different from that of the so-called greenback inflation of the Civil War. In one respect, however, the two periods were in sharp contrast: while prices began to decline even before the end of the Civil War, they continued to rise for a year and a half after the conclusion of hostilities in 1918. Thus far in the present war the rise in prices has been much more moderate than it was in either of the other periods.

The purpose of this paper is to present the significant facts in regard to changes in the volume and composition of circulating medium in this country since the start of the war in Europe. It will trace the details of the changes that have occurred, the processes whereby they have come about, and some of the accompanying changes and adjustments among related economic phenomena. It will then undertake to discuss a few of the problems, particularly those relating to the process of expansion and price movements, that are associated with alterations in the circulating medium.

## THE GROWTH OF CURRENCY AND DEPOSITS

### *Changes in the Volume of Circulating Medium*

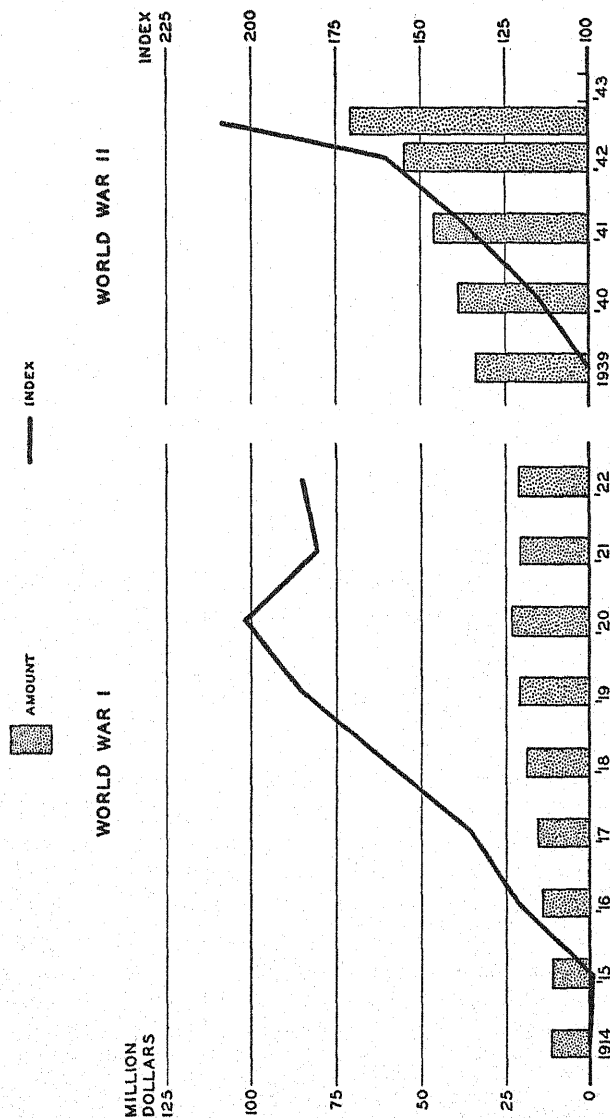
The most striking feature of recent changes in circulating medium is the increase of over 30 percent during the second half of 1942 (see Chart 1). The rate of growth in this six-month period was far in excess of that reached at any time during the last war period, reflecting the much larger scale of war financing, relative to national income, attained in this war. During the fiscal year 1942-43 alone, the increase in circulating medium was greater than the total amount outstanding in any year of the first World War.

Since September 1939 the quantity of circulating medium has risen rapidly, in immediate and pronounced response to the effects of war. This is in sharp contrast to the slight increase in the first year of the other war. A further difference between the two periods is that where previously the most rapid increase occurred before our entry into the war, in this period the most rapid increase was after Pearl Harbor.

The general rule that war stimulates the growth of the circulating medium has been demonstrated repeatedly both in this country and abroad. It is illustrated by comparing the rate of growth in years of war and peace over the past half century. From 1892 to 1942 the circulating medium of this country increased at an average rate of 6 percent a year.<sup>2</sup> The average annual increase during the prosperous peacetime years from 1922 to 1929 was only 3 percent, but it was 13 percent from June 1914 to June 1919 and 23 percent from June 1939 to the end of 1942. This compares with 2 percent in the intervening years and 5 percent in the period from 1892 to 1914. The extent

<sup>2</sup> Average annual rates of increase or decrease are calculated by the compound interest formula.

# CHART 1—TOTAL CIRCULATING MEDIUM, WORLD WARS I AND II <sup>a</sup>



<sup>a</sup> Based on *Federal Reserve Bulletin* and Board of Governors of the Federal Reserve System, *Banking Studies* (1941) Table 29. Includes currency outside banks and total deposits less interbank deposits, time deposits, items in process of collection, and certificates of deposit. Dates are for June 30.

of variation in the volume of circulating medium ranged from a decrease of 14 percent in 1931-32 to an increase of 41 percent in the calendar year 1942.

The recent monetary expansion is the more remarkable in that the volume of circulating medium was already large when the present war began. In June 1939 the total of circulating deposits and currency was \$34 billion, or nearly three times what it was in 1914 and nearly 50 percent above the high point reached soon after the last war. While prices, national income, and physical production were substantially higher in 1939 than in 1914, the increase in circulating medium was still greater. Per capita circulation stood at \$72 in 1900, \$222 in 1920, \$208 in 1930, and \$301 in 1940. At the end of 1942 it was in excess of \$540.

### *Changes in Composition of the Circulating Medium*

The circulating medium consists of three parts, currency in circulation, adjusted demand deposits, and United States government deposits with commercial banks and Federal Reserve Banks.

The increased use of currency in recent years, relative to the use of checks, is less a symptom of reversion to more primitive financial methods than an indication of certain shifts in the distribution of income and in methods of conducting trade. Moreover, the change in composition of the money supply, though accentuated by the two wars, has been going on for a quarter of a century. Demand deposits in 1914 were nearly seven times currency in circulation, but by the end of 1939 they were only about four and a half times as large as currency.

Table 1 shows that although the absolute increase in adjusted demand deposits between 1939 and 1942 was considerably greater than in currency or United States government deposits the relative increase was smaller. The more rapid growth of currency than of deposits repeats the experience of the first World War when currency rose from a ratio of 15 percent of deposits in 1914 to a ratio of 24 percent in 1918. In the middle of 1939 currency amounted to 23 percent of demand deposits and at the end of 1942 to 29 percent. This is equivalent to saying that the average annual rate of increase in currency between 1939 and the end of 1942 was 27 percent, while that of demand deposits was only 18 percent. While, as seems to be typical, the growth of currency has attracted more widespread interest, the expansion of deposits is, from most points of view, of greater economic significance.

Of the increase between June 1939 and December 1942 in total currency held both inside and outside banks, 45 percent was in denominations of \$10 and less, and 77 percent was in denominations of \$20 and less. Corresponding figures for the period 1914-20 are 42 percent and 84 percent. In the earlier period only 16 percent of the increase, as compared with 23 percent

TABLE 1—COMPOSITION OF CIRCULATING MEDIUM AND TIME DEPOSITS, WORLD WARS I AND II <sup>a</sup>

June 30	CIRCULATING MEDIUM											
	Currency in Circulation			Adjusted Demand Deposits			U.S. Government Deposits			Time Deposits		
	Amount (millions)	Index	Annual Change	Amount (millions)	Index	Annual Change	Amount (millions)	Index	Annual Change	Amount (millions)	Index	Annual Change
	WORLD WAR II											
1939	\$6,010	100.0	..	\$27,350	100.0	..	\$790	100.0	..	\$26,800	100.0	..
1940	6,700	111.5	11.5%	31,960	116.9	16.9%	830	105.1	5.1%	27,470	102.5	2.5%
1941	8,200	136.4	22.3	37,320	136.5	16.8	750	94.9	-9.7	27,880	104.0	1.5
1942	10,940	182.0	33.4	41,840	153.0	12.1	1,840	232.9	145.3	27,310	101.9	-2.1
1942 (Dec. 31)	13,950	232.1	27.5 <sup>b</sup>	48,850	178.6	16.8 <sup>b</sup>	8,470	1,073.2	360.3 <sup>b</sup>	28,400	106.0	4.0 <sup>b</sup>
	WORLD WAR I											
1914	\$1,530	100.0	..	\$10,060	100.0	..	\$70	100.0	..	\$7,980	100.0	..
1915	1,580	103.3	3.3%	9,900	98.4	-1.6%	50	71.4	-28.6%	8,930	111.9	11.9%
1916	1,880	122.9	19.0	12,250	121.8	23.7	40	57.1	-20.0	9,840	123.3	10.2
1917	2,280	149.0	21.3	12,570	125.0	2.6	830	1,185.7	1,975.0	12,430	155.8	26.3
1918	3,300	215.7	44.7	13,780	137.0	9.6	1,570	2,242.9	89.2	12,990	162.8	4.5
1919	3,610	235.9	9.4	16,980	168.8	23.2	960	1,371.4	-38.9	13,970	175.1	7.5
1920	4,130	269.9	14.4	19,080	189.7	12.4	300	428.6	-68.7	16,310	204.4	16.8
1921	3,700	241.8	-10.4	17,030	169.3	-10.7	420	600.0	40.0	16,690	209.1	2.3
1922	3,360	219.6	-9.2	17,990	178.8	5.6	170	242.9	-59.5	17,620	220.8	5.6

<sup>a</sup> *Federal Reserve Bulletins* and Board of Governors of the Federal Reserve System, *Banking Studies* (1941) Table 29.

<sup>b</sup> Six months increase, June 30 to December 31, 1942.

in the later period, was in denominations over \$20. This difference is partially explained by the fact that in 1917 the law was changed to require member banks to hold legal reserves exclusively with the Reserve Banks. The effect of this change was to reduce the quantity of larger denominations needed by banks for reserve purposes as compared with what would otherwise have been required.

From 1939 to the end of 1942 the increase in the denominations of \$20 and less was greater than in denominations above. The greatest relative increase took place not in the smallest denominations but in \$20 bills which, in terms of total value, for the first time supplanted \$10 bills as the most widely used monetary type. The increase by value in dollar bills was less than in any of the other denominations from \$1 to \$500, with the single exception of \$2 bills.

Comparable data as to the number and size of demand deposits are not available, but on the basis of a special study by the Federal Deposit Insurance Corporation covering 1938-41 it appears that the increase in the number of accounts was largely in deposits of \$5000 and less while the increase in volume was chiefly in deposits over \$5000.

The remaining element of the circulating medium consists of deposits of the United States government held in commercial banks and with the Federal Reserve Banks. On the average these deposits are not a large part of the circulating medium, but they exhibit a high degree of variability. As is to be expected, their volume increases substantially in time of war.

Treasury expenditures rose from \$9 billion in the fiscal year 1938-39 to \$78 billion in the fiscal year 1942-43. The growth in Treasury balances of approximately \$8 billion between June 1939 and December 1942 is not extreme as compared with the increase in federal expenditures, but the growth in the balance in the last half of 1942 calls for particular notice. This increase, which took place chiefly at the end of the year, reflects a change in Treasury borrowing policy. Until December 1942 the Treasury made monthly offerings to meet current expenditures, and the Treasury balances maintained up to that time were not large. In December, however, the Treasury adopted a policy of more intensive borrowing with campaigns spaced at intervals of several months. To the extent that expenditures are balanced with receipts from taxation and borrowing, large Treasury balances are unnecessary. As a consequence of the change in borrowing methods, substantial Treasury balances are built up at the close of a loan campaign; these are then drawn down until the next campaign. Thus the amount of the Treasury balance reflects not only the scale of Treasury operations, but also the methods whereby those operations are financed.



## *Time Deposits*

In addition to considering the changes in the circulating medium, the changes that have occurred in the volume of time deposits (including savings deposits) may also be noted. While these deposits are not ordinarily classed as part of the money supply they are convertible into circulating media on short notice and thus may have considerable monetary significance, as will be seen later.

From 1922 to 1939 time deposits rose by a little more than \$9 billion. The annual rate of growth was approximately the same as that for demand deposits during the same period. However, the movements during the period were by no means similar: a large part of the growth in demand deposits occurred in the latter part of the thirties, while time deposits increased more rapidly during the twenties and then declined so that the amount outstanding as recently as December 1942 was less than in 1928-29.

During the present war period the over-all growth in time deposits has been small, and for some months following Pearl Harbor there was a slight decline. This is in contrast with the first World War period when time deposits increased at a slightly faster rate than demand deposits. The increase in time deposits during the period of the first World War and in the twenties may be attributed in part to a reclassification of deposits to take advantage of the lower reserve requirements provided by the Federal Reserve Act on this category of deposits. It may also have been influenced by the fact that a fairly high rate of interest, in some cases above 6 percent annually was paid on time deposits during those years.

The failure of time deposits to rise materially during the present war may be due in part to the fact that some banks will no longer accept time deposits at all and others pay interest on time deposits only up to a limited amount of such deposits. If the bonds are held to maturity, the return to small savers on war savings bonds is today considerably greater than on savings deposits. The resulting opportunity to combine patriotism and good business judgment has probably induced many individuals to put their funds in government bonds rather than in savings deposits. To some extent, indeed, savings deposits appear to have been withdrawn in order to enable individuals to purchase war savings bonds.<sup>3</sup> The strong pressure to invest savings in government bonds—in which many savings banks have joined—has undoubtedly served to hinder the growth of time deposits.<sup>4</sup>

<sup>3</sup> This also happened on a small scale in the last war.

<sup>4</sup> The fact that time deposits have failed to rise appreciably in the present war does not reflect any shrinkage in the relative proportion of highly liquid earning assets owned by the public. For millions of people redeemable war savings bonds have largely taken the place of savings deposits.

### *Differences by Location and Class of Bank*

From the middle of 1939 to the end of 1942 the rate of growth of demand deposits in the three eastern Federal Reserve districts, Boston, New York and Philadelphia, was below the average for the country as a whole, while the increase in all other districts was above the average (see Table 2). The New York district had the smallest relative expansion, but this constituted over a quarter of the total absolute increase for the country. The greatest relative increase occurred in the San Francisco district, with nearly 14 percent of the total increase for the country. The rate of growth was also high in the Richmond and Atlanta districts, but together these two districts accounted for only 10 percent of the total increase in deposits during the period.

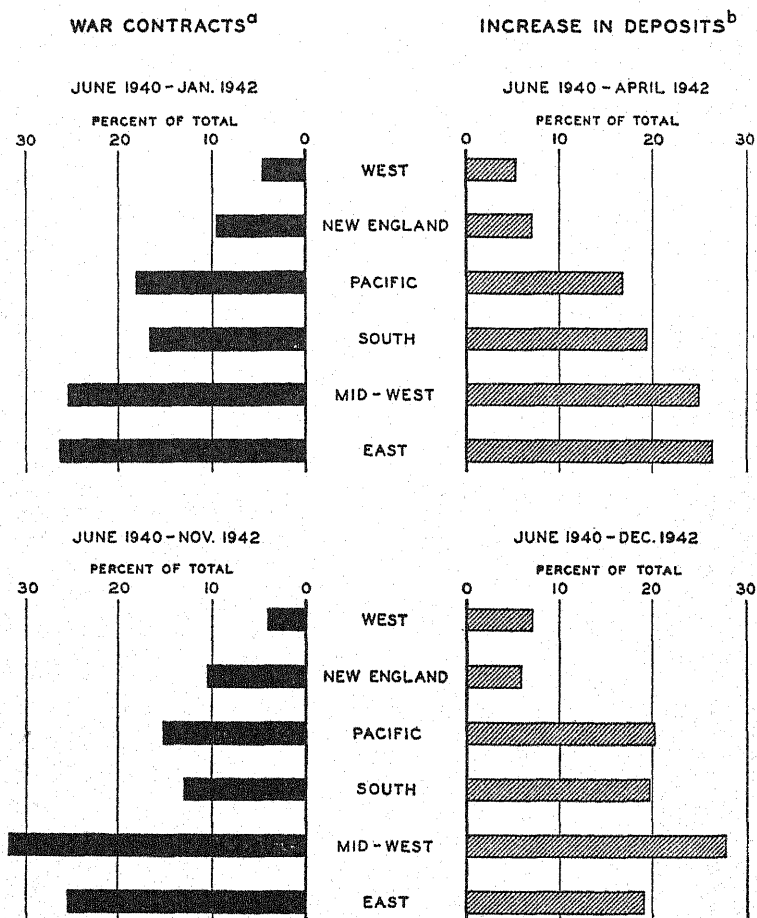
Chart 2 shows the distribution of war contracts and the growth of deposits of national banks among major geographical divisions of the United States between the middle of 1940 and the end of 1942. The correspondence

TABLE 2—PERCENTAGE INCREASE IN DEMAND DEPOSITS OF FEDERAL RESERVE MEMBER BANKS, AND PERCENTAGE DISTRIBUTION, JUNE 1939 TO DECEMBER 1940, BY FEDERAL RESERVE DISTRICTS <sup>a</sup>

<i>District</i>	<i>Percentage Distribution</i>		<i>Percent of Increase, Dec. 1942 over June 1939</i>	<i>Percentage Distribution of Increase</i>	<i>Relative Change in Percentage Distribution</i>
	<i>June 1939</i>	<i>Dec. 1942</i>			
San Francisco	7.5%	10.3%	157.4%	13.5%	37.0%
Richmond	3.4	4.2	137.1	5.3	26.2
Atlanta	3.0	3.7	131.9	4.5	23.5
Minneapolis	1.8	2.1	118.8	2.5	16.4
St. Louis	3.1	3.5	112.3	3.9	13.0
Dallas	3.6	4.0	108.8	4.4	11.2
Cleveland	7.1	7.7	104.4	8.4	8.9
Chicago	13.6	14.7	103.4	16.0	8.3
Kansas City	3.6	3.9	100.0	4.1	6.3
Philadelphia	5.6	5.4	82.8	5.3	—2.7
Boston	6.3	5.8	71.9	5.2	—8.4
New York	41.4	34.7	56.9	26.9	—16.4
UNITED STATES	100.0%	100.0%	87.7%	100.0%	..

<sup>a</sup> Based on data from Board of Governors of the Federal Reserve System, *Member Bank Call Reports*. Demand deposits include deposits of individuals, partnerships, and corporations.

CHART 2—WAR CONTRACTS AND INCREASE IN DEMAND DEPOSITS  
OF NATIONAL BANKS, BY REGION, JUNE 1940 TO DECEMBER 1942



<sup>a</sup> Based on National Industrial Conference Board, *America's War Effort* (May 1942) and *Economic Record*, Vol. V, No. 2 (February 1943).

<sup>b</sup> Based on Comptroller of the Currency, *Abstracts of Reports of Condition of National Banks*. All demand deposits except interbank and United States Government deposits.

between war contracts and deposit growth was particularly close in the earlier of the periods shown, namely, for contracts placed between June 1940 and January 1942 and deposit growth from June 1940 to April 1942. For the longer periods, starting in June 1940 and ending in November 1942 and December 1942 respectively, the correspondence was less close, but was nevertheless sufficient to suggest that the distribution of war contracts may have been an important factor in the regional expansion of deposits.

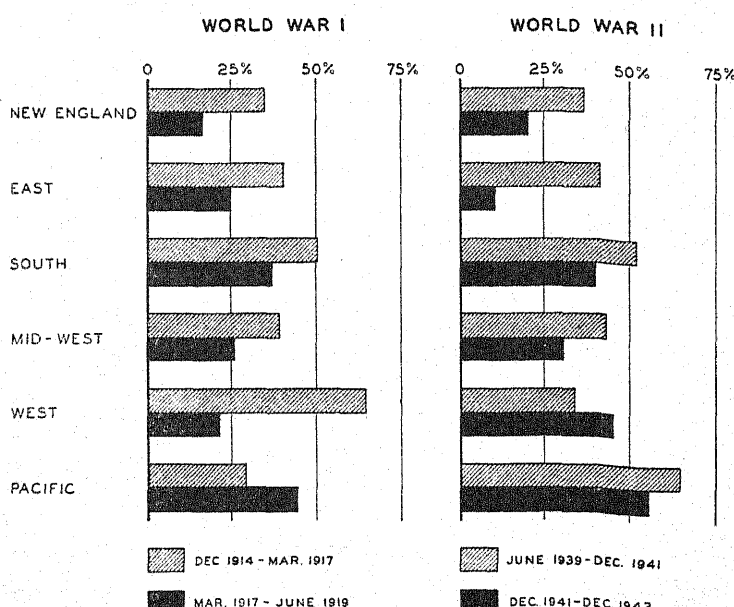
Nor has the rate of increase in deposits been uniform within Federal Reserve districts. In the same area and within the same class some banks showed increases in deposits, while others experienced little or no increase and a few have lost deposits. On the average, country banks had the largest relative increase in deposits (Table 3). In all districts the deposits of country banks rose more rapidly than the deposits of Reserve City banks, but in some districts the difference was large, especially in the Boston district, and in others slight, as in the Chicago and New York districts. The per-

TABLE 3—PERCENTAGE INCREASE IN DEMAND DEPOSITS OF FEDERAL RESERVE MEMBER BANKS, JUNE 1939 TO DECEMBER 1942, BY FEDERAL RESERVE DISTRICTS <sup>a</sup>

<i>District</i>	<i>All Member Banks</i>	<i>Central Reserve City Banks</i>	<i>Reserve City Banks</i>	<i>Country Banks</i>
San Francisco	157.4%	..	152.5%	185.6%
Richmond	137.1	..	123.9	152.3
Atlanta	131.9	..	112.8	152.5
Minneapolis	118.8	..	99.4	137.7
St. Louis	112.3	..	91.5	149.3
Dallas	108.8	..	86.0	132.9
Cleveland	104.4	..	91.6	133.6
Chicago	103.4	65.4%	143.2	143.7
Kansas City	100.0	..	83.1	125.9
Philadelphia	82.8	..	76.5	92.1
Boston	71.9	..	46.3	102.1
New York	56.9	51.0	101.0	105.1
UNITED STATES	87.7%	53.3%	105.4%	127.4%

<sup>a</sup> Based on data from Board of Governors of the Federal Reserve System, *Member Bank Call Reports*. Demand deposits include deposits of individuals, partnerships, and corporations.

CHART 3—DEMAND DEPOSITS IN NATIONAL BANKS, BY REGION,  
WORLD WARS I AND II <sup>a</sup>



<sup>a</sup> Based on Comptroller of the Currency, *Abstracts of Reports of Condition of National Banks*. All demand deposits except interbank and United States Government deposits.

centage increase for Central Reserve City banks was far below that for the other two classes of banks. In the last war the rate of increase was greatest in Reserve City banks. The growth in deposits from June 1939 to December 1942 was distributed among the different classes of banks as follows: country banks 34 percent, Reserve City banks 39 percent, Central Reserve City banks 27 percent.

The nature of deposit growth before and after America's formal entry as a belligerent discloses a number of differences in the two wars (Chart 3). Deposit expansion in New York City was rapid after we entered the last war. It was large from the start of hostilities in 1939 to the middle of 1941 but has been small since that time, a difference closely associated with the heavy inflow of gold from 1939 to the spring of 1941 and the virtual cessa-

tion of this movement since. In the Middle West deposit expansion was only moderate in the last war and before our entry into the present war. Following Pearl Harbor, deposits in the Middle West increased more rapidly than the average for the country. The Pacific states, which had experienced the smallest increase before we entered the last war, showed the highest rate of increase thereafter. During the present war they have experienced a more rapid increase than any other region both before and after our entry. In both wars deposit expansion in New England was consistently below the average for the country and in the South consistently above.

#### HOW THE QUANTITY OF CIRCULATING MEDIUM CHANGES

Since a demand deposit is, by definition, the right to demand currency whenever desired, it is within the power of individuals to increase or decrease the amount of currency outstanding by simply cashing checks drawn on demand deposits or, conversely, by adding to checking accounts through the deposit of currency. Likewise, an increase or decrease in the volume of other highly liquid assets, such as time deposits and short-term obligations, may influence the amount and activity of currency in circulation.

#### *The Volume of Currency*

The composite choice of individuals, then, governs the amount of currency in circulation. The decision lies with the public. The process of increasing or decreasing the currency outstanding is largely automatic and commercial banks, the Reserve Banks, and the Treasury are, at any given moment, merely the agents through which the preference of individuals is expressed. "Neither the Federal Reserve Banks nor the Treasury have under ordinary circumstances any direct way of keeping in circulation a larger amount of currency than the public requires or of reducing the amount of currency that the public needs to finance its current operations."<sup>5</sup>

Since the attitude of the public governs proximately the volume of currency, it is pertinent to ask what determines the attitude of the public. In general terms this may be said to depend chiefly on the physical volume of trade and the prevailing level of prices; the methods by which trade is conducted, whether by check or cash; the types of economic activity pursued; and the volume of demand deposits. At times it may be affected by such factors as confidence in the banks and changes in the distribution of the national income.

<sup>5</sup> Board of Governors of the Federal Reserve System, *Banking Studies* (1941), p. 310.

The importance of the volume of currency in circulation is not confined to its role as a part of the circulating medium. Under normal conditions, the quantity of currency in use is highly significant because of its effect on bank reserves and thus on the possible expansion of demand deposits. The withdrawal of currency for use in circulation tends to decrease the reserves of commercial banks, while a deposit of currency has the opposite tendency.<sup>6</sup> One of the chief reasons for the decline in member bank reserves in 1941-42 was an increase of currency in circulation. Such changes may be offset by the monetary authorities. Thus the currency expansion was largely responsible for the action of the Federal Reserve Banks in making reserves available after April 1942, through open-market purchases and reduction of reserve requirements.

Under conditions that now prevail, the amount of currency in circulation has far less effect than formerly on the quantity of reserves and hence on the volume of demand deposits. In order to enable banks to support the Treasury's borrowing efforts, reserves are being freely provided by the Reserve authorities in whatever amount appears necessary. Consequently, an increase in the amount of currency in circulation, which ordinarily would entail a reduction of reserves, is likely to be offset by an expansion in Reserve Bank credit and therefore to have little or no net effect on the total of reserves. Its principal effect, in such a situation, is to alter the scale of Reserve Bank action designed to provide banks with reserves. At some future time, however, there may be a return flow of currency into the banks. Unless offset by Federal Reserve action, this would increase the volume of excess reserves in accordance with usual expectations as to the effects of currency movements. Thus the present growth of currency in circulation is likewise a growth in potential excess reserves, an excess that may be highly significant in the future.

### *The Volume of Demand Deposits*

Changes in the volume of demand deposits come about in quite a different manner. The process whereby they expand or contract constitutes one of the most ingenious and important operations of the entire financial system, yet it is sufficiently subtle to remain a mystery to most customers of banks and even, it may be said, to some bankers.

For most of us the creation of a deposit consists of nothing more com-

<sup>6</sup> If the change in volume of currency takes the form of Federal Reserve notes, the reserves of the Reserve Banks are likewise affected to a greater extent than they would be by a similar change in member bank deposits. This is primarily because of the higher reserves the Federal Reserve Banks must maintain against notes (40 percent as compared with 35 percent on deposits). Questions relating to the reserves of the Federal Reserve Banks will be dealt with in a subsequent study in this series.

plicated than going to a bank and leaving currency or checks to be placed to our credit on the books of the bank. We think of a bank as little more than the custodian of our working balances and idle funds. Even when businessmen obtain deposit balances by borrowing from banks we are likely to conclude that the funds they are given must previously have been left at the banks by other customers. It may happen, however, that what they got was not the title to a specific amount of currency physically in the banks but simply the banks' promises, newly created for the purpose and secured by the notes and collateral the businessmen gave in exchange. Far from this being something to condemn, it represents the discharge of a significant banking function. It is the distinguishing feature of normal commercial banking routine, and the device upon which we have traditionally relied to adjust the supply of circulating medium to the changing needs of trade. On a larger scale and with the Treasury in the role of borrower, it has become a cardinal feature of war finance.

It is often maintained that when deposit expansion is based on production or trade it is not inflationary, since the increase in circulating medium presumably is accompanied by a corresponding increase in the volume of business transacted and, when the volume of business declines, presumably is followed by a corresponding contraction. This assumption, questionable at best, clearly does not apply at present; the basis of deposit creation now consists of government obligations and the proceeds, since they are devoted to war purposes, fail to bring about a corresponding increase in the supply of goods available for civilian purchases. Deposit creation today must be thought of in terms of the financing of government debt and not in the more familiar terms of discounting the obligations of business enterprisers. Clearly any automatic tendency toward early contraction of the supply of deposits has now disappeared.

When the government borrows from individuals out of their current income, as through the sale of war savings bonds, the operation amounts to a simple transfer of funds. As a result of the transaction, the government has that much more money to spend and individuals that much less. The effect of such a transfer may be to alter the character of demand for commodities, since government purchases differ from those of private consumers. The effect may also be to alter to some extent the rate at which money circulates. In any case, the increase in the amount of cash funds at the disposal of the government is offset by an equivalent decrease in the amount of cash at the disposal of the general public. While particular lines of business may be stimulated or retarded, the net over-all effect of this sort of borrowing is not likely to be markedly expansionist or contractionist.

When the government borrows from commercial banks, the effect is likely



to be very different. The usual procedure in such a case is for the banks to acquire the government's obligations and to place a corresponding total of demand deposits to the credit of the government. These deposits are a product of the lending operation. They can be used by the government, through the familiar process of drawing checks against the deposit balances, to pay for the things the government requires. The deposits at the disposal of the government are additional to those previously in existence. As a result of their creation the total circulating medium of the country has been increased by that amount. This is, indeed, the distinctive feature of Treasury borrowing from banks, the fact that the government acquires means of payment without reducing the amount at the disposal of the general public.

Some questions may arise as to the subsequent history of the deposits resulting from borrowing at banks: will not those newly created deposits be extinguished the first time checks are drawn against them? We know from our own personal observations and, what is much more conclusive, from statistics of bank deposits that this is not at all what usually happens when checks are drawn against demand deposits. The overwhelming bulk of checks are simply deposited in other checking accounts, chiefly in other banks. Except when they are the means of withdrawing currency, the use of checks ordinarily entails a transfer of the ownership of deposits but not their extinction. In all probability the deposits created in the manner just described will remain in existence until the original process is reversed through a reduction in the total of assets held by the banking system. In case there is a withdrawal of currency the effect is to change the form but not necessarily the quantity of the circulating medium outstanding.

Borrowing out of current income, then, represents a simple transfer of the means of payment and does not increase total demand as represented by the volume of circulating medium. Borrowing from commercial banks, on the other hand, entails a growth in the means of payment in the form of demand deposits. And since it presumably involves an increase in total demand for available goods it tends, under conditions of full employment of economic factors available for the production of civilian goods, to be inflationary. This is not to say that borrowing from banks will inevitably result in inflation. The inflationary tendencies of this type of borrowing may be offset by other factors. But a significant difference between borrowing from the public and from banks remains, namely, that the former does not of itself expand the volume of circulating medium while the latter definitely is expansionist in character.

The expansion of demand deposits is ordinarily held within fairly narrow limits by the existence of certain quantitative checks. In time of war and

as a direct consequence of war financing, the efficacy of these checks is greatly impaired. The possibility then arises of an extreme increase in the volume of deposits. This was illustrated in the experience of the first World War, and is again being illustrated, in greater degree, in the present war.

The chief limitation on the growth of deposits is the necessity of holding reserves. There are two principal sources from which reserves may be obtained, the receipt of new reserve funds, such as currency or gold, from outside the banking system and the creation or release of reserve balances by the central bank. No net addition to reserves has been forthcoming from the first of these sources for some time: reserves have been subject to drain as a consequence of the expansion of currency in circulation, and there has been no significant increase in gold stocks since early in 1941. As long, however, as the Reserve authorities continue to make available whatever additional reserves are needed for the purchase of government securities by banks, the necessity of maintaining reserves cannot impose any serious limitation upon the expansion of demand deposits.

The other traditional check on the process of deposit expansion is the extent of the demand for credit by borrowers whose creditworthiness is acceptable to the banks. At the present time the demand for additional bank credit comes almost entirely from the government. The credit of the government is of the highest quality; in addition, the banks are under strong patriotic compulsion to accept it. Because of the continuing requirements of the government, the demand for bank credit, far from limiting the process of deposit growth, is a factor making for its further increase.

To the extent that the Treasury makes use of non-inflationary methods of financing, such as taxation or borrowing out of income, it is able to refrain from borrowing from commercial banks. If the Federal Reserve were both disposed and able to maintain a restrictive policy, the present expansionist effects of borrowing from banks might conceivably be abated. Failing these two possibilities, there is no clear likelihood of an early check to the growth of bank deposits.

Reserve authorities have gone to great lengths to encourage banks to expand deposits through the purchase of government securities. They have undertaken to provide adequate reserves; they have agreed to buy and sell Treasury bills at a fixed rate and have absorbed other types of securities when such action seemed necessary; they have accepted the task of maintaining the present pattern of interest rates on government obligations; they have facilitated the opening of depository accounts to the credit of the government; they have urged banks to buy to the absolute limits of their available resources and thus provide "total support for the government's borrowing program." Far from acting, as they presumably would in peace-

time, to restrict the continued expansion of member bank deposits, they have fostered it in a variety of ways.

This does not mean that the Reserve authorities have been unmindful of the underlying economic situation or have wantonly sponsored inflationary practices. Exactly the opposite is the case. One of the primary purposes of Reserve policy has been to encourage banks in areas where reserve funds were piling up to turn those funds over to the government. Besides providing a broader distribution of government securities and relieving the strain on New York and Chicago, it was believed that the fullest possible utilization of existing bank resources would reduce the net inflationary potential.<sup>7</sup> Furthermore, while assuming responsibility for providing the reserve basis for unavoidable deposit expansion, Reserve authorities have attempted to hold such expansion to a minimum by promoting borrowing from other sources than commercial banks.

Federal Reserve policy with respect to the purchase of securities by member banks contrasts sharply with the policy followed in the last war. While banks were urged to buy short-term government obligations, the Reserve Banks "vigorously discouraged"<sup>8</sup> them from the purchase of Liberty Bonds. The difference is to be explained partly on the ground that at that time the Treasury followed a different policy in making payments on war contracts and partly that member banks were chiefly engaged in financing the war effort either directly through advances to business or indirectly through loans to customers which enabled the latter to pay for government securities. Consequently there was less reason for banks to undertake to lend directly to the government. The relatively smaller scale of the entire war program may have made heavy borrowing from banks less urgent. And perhaps of greater importance, banks were regarded as dealers in short-term paper, a type of asset then available in large volume and at favorable rates, and the holding of other securities was generally opposed.

### *Factors in the Wartime Expansion of Deposits*

A growth in total deposits must, in the practical mechanics of banking, be balanced by offsetting shifts in other accounts included in the balance sheets of banks. These shifts take the form of an expansion of some items and a contraction of others. Table 4 presents changes in certain financial quantities that are closely related to the major shifts occurring in balance sheet items during the present war.

Examination of the different accounts shows that the factors related to the growth in demand deposits have differed substantially at various times

<sup>7</sup> See Federal Reserve Bank of New York, *Annual Report for 1942*, pp. 10-27.

<sup>8</sup> *Federal Reserve Bulletin*, April 1919, p. 328.

in this war, as they also did in the last. For the most recent period, covering the calendar year 1942, the large increase in government obligations was dominant though the rise in Federal Reserve credit was also important. A counteracting element tending to limit the expansion in demand deposits was the substantial increase in money in circulation. In 1942 the increase in Federal Reserve credit was approximately equal to the increase in currency in circulation. These three items are the major factors, both positive and negative, in the growth of demand deposits during 1942.

The growth in the country's stock of gold was the most important factor in the expansion of demand deposits in the first two years of the war. This contrasts sharply with the year 1942, when the change in gold stocks was negligible. The other chief difference was in loans and discounts which increased substantially prior to the end of 1941, and decreased slightly thereafter. In both periods of the present war, holdings of government securities and currency in circulation have expanded materially, with the greatest increase in 1942.

The difference in the relative importance of holdings of government securities and of loans and discounts constitutes the most notable contrast in the balance sheets of banks in the two wars. The difference is partly explained by the fact that in the earlier period extensive loans were made on the security of government obligations. The growth in loans and discounts

TABLE 4—CHANGES IN FACTORS RELATED TO GROWTH OF DEMAND DEPOSITS, 1939-42 <sup>a</sup> (in billions)

Factor	June 30, 1939- Dec. 31, 1941	Jan. 1, 1942- Dec. 31, 1942
FACTORS PROMOTING GROWTH		
Rise in bank holdings of Federal obligations	\$6.1	\$19.6
Rise in bank loans, discounts, and overdrafts	5.3	..
Rise in Federal Reserve credit outstanding	..	4.3
Rise in gold and silver monetized	7.4	.2
TOTAL	\$18.8	\$24.1
FACTORS RESTRICTING GROWTH		
Decline in bank loans, discounts, and overdrafts	..	\$2.5
Decline in Federal Reserve credit outstanding	\$2	..
Rise in currency outside banks	3.6	4.3
Rise in other restricting factors	2.2	.9
TOTAL	\$6.0	\$7.7
Net change in demand deposits	+\$12.8	+\$16.4

<sup>a</sup> Based on data from *Treasury Bulletin* and *Federal Reserve Bulletin*.

was chiefly responsible for the growth in demand deposits between June 1914 and June 1919. The role of loans and discounts at that time was scarcely as dominant, however, as that of government securities in the present war. During our participation in the last war, the tendency for demand deposits to increase was checked by the rapid growth of time deposits, while since our entry into the present war time deposits have remained almost unchanged.

One of the few consistent threads running through both periods has been the tendency for currency in circulation to increase. While such an increase is characteristic of war and customarily accompanies a growth in demand deposits, the magnitude of the recent expansion of currency, particularly in the year following Pearl Harbor, is wholly exceptional.

#### WHAT BECOMES OF THE INCREASED CIRCULATING MEDIUM?

The present section is a statement of accompanying phenomena rather than causes. The issue of causal relationships raises points of theory on which there is no general agreement and into which it is not practicable to enter here. The problems to be examined are of a quantitative rather than a qualitative character. To what uses is the increased quantity of circulating medium being put? What groups are obtaining ownership of the increased volume of circulating medium? Has there been an increase in idle money?

#### *Use of the Circulating Medium*

The great expansion in economic activity since the beginning of the war is apparent in almost every field. The increase both in the general level of prices and in the physical volume of goods and services signifies more work to be done by the circulating medium. The higher level of economic activity is reflected in the percentage of increases from December 1939 to December 1942 shown by different business indicators of which the following are representative:<sup>9</sup>

Industrial production	
(physical volume)	57.6%
Total farm marketings	
(physical volume)	31.8
Income payments	64.0
Farm	132.7
Non-Farm	58.2

<sup>9</sup> Source: *Federal Reserve Bulletins* and Bureau of Foreign and Domestic Commerce, *Survey of Current Business*. While this table does not provide a measure of the physical volume of trade it indicates that substantial increases in trade have occurred. A large part of current payments are for war commodities for which standard price indexes are hardly relevant and several economic areas such as finance and service are only indirectly represented by the indexes given here.

Factory payrolls	153.9%
Department store sales (value)	31.6
Wholesale commodity prices	27.5
Cost of living	20.9
Prices received by farmers	85.4
Circulating medium	92.3

Some businesses and individuals have increased their holdings of deposits and currency in order to provide for growing tax liability, purchase of government bonds, debt retirement, future goods purchases, and emergencies. Such accumulations slacken the rate at which money circulates.<sup>10</sup> Adoption of the policy of heavy borrowing at intervals of several months has involved an increase in the average balance held by the Treasury and thereby reduced the activity of circulation of money. Other evidence likewise indicates a decrease in the rate of turnover of money. From the end of 1939 to the end of 1942 adjusted demand deposits increased 64 percent but monthly bank debits, which reflect the volume of total payments effected, increased by only 50 percent. The figure for the velocity of bank deposits in the 101 leading cities as computed by the Federal Reserve Bank of New York shows a decline in these three years from 22.5 to 20.5 per annum.<sup>11</sup>

The greater use of circulating medium has apparently taken the form not only of a larger volume of current payments effected, but also of the accumulation of larger reserve balances in anticipation of future payments.

### *The Increase in Deposits*

Any calculation of the distribution of cash holdings among different owners is influenced to some extent by the time when the calculation is made. Cash is accumulated for payments, such as investments, taxes, and dividends, which are made at irregular intervals. The irregularity of disbursements leads to fluctuations in the amount of cash held by corporations and others. In particular, the sharp rise in Treasury balances at tax dates and at the time of loan drives finds its counterpart in a decrease at such times in the volume of private holdings. At best, our knowledge regarding the ownership of cash balances is limited and any conclusions based on present understanding are tentative and subject to revision as further information becomes available.

<sup>10</sup> Changes in the rate of monetary circulation may also result from changes in the methods of payment. Thus a reduction in the use of consumer credit or an increase in the payroll period would contribute to a slower turnover of money.

<sup>11</sup> Largely because of the number and variety of financial items included in debits to deposit accounts, they are not to be regarded as an accurate measure of the velocity of money used in payment for goods and services.

It appears from the *Statistics of Income*, supplemented by a study of corporate cash balances undertaken by the National Bureau of Economic Research, that in December 1939 non-financial corporations held 26 percent, and financial corporations, other than banks, 10 percent of total adjusted demand deposits.<sup>12</sup> State and political subdivisions held approximately 10 percent and the holdings of foreigners, exclusive of foreign banks, amounted to 6 percent. The remainder, 48 percent, was held by "all others." This category includes individuals, unincorporated businesses, personal trust accounts, and eleemosynary institutions. A large proportion of the currency in circulation was also held by this group.

Data comparable with those of 1939 are not available to show the distribution of ownership of deposits at the end of 1942. However, we know that from December 1939 to December 1942 the demand deposit balances of all groups increased by approximately 64 percent, and a study of selected corporate balance sheets gives some indication of how this growth has taken place among different classes and users of deposits.

An analysis of these data indicates that the deposit balances of non-financial corporations increased approximately 85 percent in this period, or considerably more than the average increase for all demand deposits. This was offset by a decline of more than 30 percent in the balances of financial corporations, with the result that the deposit balances of all corporations other than banks increased at a somewhat slower rate than total demand deposits. The accounts of state and political subdivisions increased approximately 40 percent and the reported holdings of foreigners, exclusive of foreign banks, showed little change. The "all other" group increased its deposit balances more than the average. Moreover, a large part of the increased currency in circulation has also gone to this group.<sup>13</sup> In the three years ending with December 1942, the estimated rates of increase in total demand deposits and currency held by corporations and by "all others" have not been widely divergent.<sup>14</sup>

<sup>12</sup> These figures are derived from corporate cash balances which include currency on hand and time deposits as well as demand deposits. In the case of corporate groups for which details are available, demand deposits comprised over 90 percent of total cash holdings. Our calculations are based on the assumption that this ratio of 90 percent held with respect to all reported corporate cash balances. The result may be to understate slightly the amount of corporate deposit balances and to overstate the balances of "all others." Figures for 1939 are from *Statistics of Income* and for 1942 are the result of a special study of corporate balance sheets. The latter is based on samples comprising 49 financial corporations and a group of non-financial corporations including all Class I steam railroads, 31 public utility companies, and 241 industrial corporations engaged in manufacturing, trade, and construction.

<sup>13</sup> In addition to the currency held by corporations as till balances, an unknown amount has been taken outside the United States by the armed services, is held by foreigners abroad, or has been lost.

<sup>14</sup> Little is known about the growth of the deposits of the "all other" group. Sample studies

Studies made by the Securities and Exchange Commission indicate that at the end of 1942 about 40 percent of all deposits were held by domestic corporations and about 60 percent by individuals and unincorporated business. These figures were reached by methods somewhat similar to those used in the calculations presented above, and when allowance is made for minor differences in coverage the two studies agree fairly closely.

Estimates of the ownership distribution of demand deposits at the end of March 1943 have recently been released by the Federal Reserve. These are based on a survey covering principally large and medium-sized banks throughout the country. They indicate that between 70 and 80 percent of all deposits of individuals, partnerships, and corporations are held by businesses, both corporate and noncorporate, as compared with only 20 to 30 percent held by individuals. A number of factors help to explain the difference shown by the Federal Reserve estimates:

- a. Deposits of unincorporated business are included with those of corporations rather than with "others."
- b. The Federal Reserve estimates were primarily based on larger deposits in medium-sized and large banks and they do not allow for "float."
- c. In recent months corporate cash balances have begun to rise sharply because of a decline in the rate of expenditures on plant expansion, retooling, and accumulation of inventory. In some instances inventories have been reduced.
- d. The estimates relate to a date when balances were expanded with funds accumulated in anticipation of purchases of government securities in the April Treasury financing. Such accumulations were probably of relatively greater importance in business than in personal accounts.<sup>15</sup>

It is not certain to what extent the differences in the estimates are to be reconciled by the factors mentioned. At any rate they suggest the need for further study of this highly significant problem.

A further important observation is that the rate of growth of cash, meaning by this combined holdings of deposits and currency, has not been uniform among the different corporate groups: some have experienced a very large increase while others have shown a decrease. From the study

<sup>15</sup> "Much of the increase in business deposits occurred in the last three months of the fifteen-month period, and a large portion of the deposits then accumulated were utilized to purchase Government securities during the war loan drive. Insurance companies, which held exceptionally large deposits at the end of March, utilized a large portion of these to purchase securities during the drive. In addition, purchases of new securities by other corporations were substantial. During the drive bank deposits of individuals, partnerships, and corporations declined by \$5 billion or more."—Board of Governors of the Federal Reserve System, Press Release, July 7, 1943, p. 5.

made by banks suggest that a large part of the increase represents a growth of existing balances rather than the establishment of new accounts. They indicate also that the growth was not uniform among the different categories of deposits in this group.



of corporate balance sheets referred to earlier, it appears that up to the end of 1942 railroads, and manufacturing and trade corporations added to their cash, while in general public utilities and financial corporations reduced cash holdings.

The increased business activity has necessitated a large expansion in the working capital needs of many organizations. Even so, cash balances of the larger corporations often exceed their current working needs. Maintenance of large balances may be designed to enable a company to retire debt or to invest in inventories or fixed assets while continuing operations in the face of a temporary drop in income. The growth of cash holdings of some companies in the period under review appears to represent the establishment or extension of such a cash cushion. In addition, most corporations have experienced a sharp increase in federal tax liability, and many companies are holding cash to meet at least part of this claim.<sup>16</sup>

The increased cash holdings of railroads represent in part an accumulation of funds which would have gone into maintenance and replacement but for inability to obtain materials. Some of the increased cash represents funds set aside for debt retirement and as an offset to increased tax liabilities. The railroads studied made temporary investments, largely in tax notes, roughly equal to the increased tax accruals. The increased amount of cash held by manufacturing and trade corporations represents the accumulation of larger working capital and, to a greater extent than for the railroads, the earmarking of funds for tax payments.

Relative to total assets, the "very large" corporations increased their cash balances less than the "large" companies. This is partly the result of the great expansion of companies, classified as large, in the aircraft, ship-building, and other industries producing military goods. The very large corporations had less need to build up working balances because of substantial amounts of cash accumulated during the thirties. By 1942, cash represented a smaller percentage than before of the current assets of both large and very large companies.

All items in current assets—inventories, receivables, marketable securities, and cash—showed an increase in the period from 1939 to 1942. Between 1941 and 1942, however, some of the companies decreased both receivables and inventory,<sup>17</sup> and this may have resulted in an accumulation of cash.

<sup>16</sup> The corporations examined offset a large part of their increased tax liability by purchasing tax anticipation certificates or short-term government securities, with a resulting reduction in cash. As long as earnings are maintained or are increasing, the tax liability may be met in whole or part out of current income; this implies a temporary increase in cash to the tax date. To a large extent the increased cash holdings represent a provision for the corporations' tax and other needs at some future time when earnings are declining.

<sup>17</sup> Twenty-seven percent of the companies in a sample of 125 reduced both receivables and inventory during 1942.

Another factor contributing to increased cash holdings was the increased bank borrowing of corporations. The total of commercial and industrial loans was 33 percent higher in 1942 than in 1939, but was lower than the 1941 peak.

Public utility companies included in the sample held slightly less cash in 1942 than in 1939; the growing tax liability appears to have been offset by the increase in tax notes and marketable security holdings. The decrease in cash balances of financial corporations is partly attributable to their participation in the Treasury borrowing program. Other financial corporations, notably sales finance companies, greatly reduced their field of operations as a result of production curbs and the regulation of consumer credit.<sup>18</sup>

### *The Relative Growth of Currency*

The comparisons just made relate to the growth in the volume of circulating medium in general and of deposits in particular, but they throw little light on the other aspect of recent monetary developments, namely, the relatively greater growth in currency than deposits. This phenomenon has been associated with certain pronounced changes in the character of payments and in the methods of effecting them.

The growth in wage payments has been much greater than the increase in other income shares. Between 1939 and 1942 civilian employment rose by 7.7 million persons.<sup>19</sup> Factory employment increased nearly 57 percent between the start of the war in 1939 and the end of 1942.

In addition to the growth in number of workers employed, there has been a substantial increase in wage rates. Average hourly earnings in factories, including higher pay for overtime, are estimated to have increased by from 33 to 37 percent between the end of 1939 and the end of 1942. An additional factor operating to bring about a rise in labor income has been an increase in the average number of hours worked per employee. The composite effect of changes in the three factors mentioned—number of workers employed, hourly wage earned, and number of hours worked—accounts for the spectacular rise in factory payrolls since the beginning of the war. On the basis of the average for 1939 as 100, factory payrolls rose to an average

<sup>18</sup> The financial change in corporate structure during the second World War will be the subject of a subsequent study in the current series of the National Bureau of Economic Research on the Effects of War on the Financial System.

<sup>19</sup> Figures for total civilian employment include the self-employed, farmers, professional groups, unpaid family workers, and students in school who work part-time. Thus the employment figures cover far more than the number of people receiving regular wages. Since a very large proportion of the reported increase in employment was in industry, the percentage increase in number of people on payrolls was much greater than the nominal rise of 15 percent would suggest.

of 242 in 1942. At the end of 1942 the figure stood at 288, or 'not far from three times the average for 1939.

While wage payments are made partly by checks, currency is employed to a relatively greater degree in paying wages than in paying dividends, rents, and other shares. To a large extent wage earners either draw their wages in currency or immediately exchange their checks for currency. The rise in factory payrolls has therefore contributed to the increased use of currency.<sup>20</sup> Moreover, as employment and wages increase, places of business which, for goodwill or profit, cash employees' checks are obliged to increase the amount of currency held as till money.

Additions to civilian employment alone provide a very incomplete picture of either the growth in number and amount of income payments or the changed pattern of income distribution. Among other things, it leaves out of account the growth of the armed forces. By the end of 1942 this group had increased by about 6½ million persons. The character of life in the armed services requires that remuneration be largely in cash and the mobility of the armed services is not conducive to the establishing of deposit accounts. Furthermore, substantial amounts of United States currency are taken outside the United States by the military authorities in order to provide for the payrolls of the various branches of the service, and this enters into the statistics of money in circulation. On the other hand, the practice of remitting part of the pay of service men in the form of allowances to their dependents has offset to some extent the need for currency to meet military payrolls.

Many of the individuals receiving increased income and dependency allowances have never been accustomed to handling their affairs through banks. Moreover, the increase in employment in the defense industries has involved shifts in population to new surroundings, and difficulties in the way of establishing banking connections as well as the possibly temporary nature of their residence have probably led the public to hold larger amounts of currency. The requirement that minimum balances be maintained and the exacting of service charges by banks have doubtless acted as additional barriers to the opening of new accounts. As a result of such developments as these, currency has come into increased importance as a storehouse of value.

Changes in the character of trade have likewise contributed to the great increase in the use of currency. An indication of the expansion in trade • payments, embodying changes in both volume and price, is afforded by the indexes of retail store sales given in Table 5. What is remarkable

<sup>20</sup> Cf. the statement that at the end of the last war "the higher wage scale with the great activity in industry, and the extravagance of the wage-earner, calling for increased circulating medium, would appear to be the main factor to which the large increase in Federal Reserve notes should be attributed."—Federal Reserve Bank of Boston, *Annual Report for 1919*, p. 19.

about this table, however, is not the rise in total retail sales of 37 percent from 1939 to 1942 but the marked difference in the behavior of sales of durable as contrasted with non-durable goods. After the middle of 1941 sales of stores specializing in durable goods declined drastically, while sales of stores specializing in non-durable goods continued to rise. In general, it is to be expected that the purchase of non-durables will be effected by currency to a greater extent than the purchase of durable goods. Furthermore,

TABLE 5—INDEXES OF SALES OF RETAIL STORES <sup>a</sup>  
(June 1939=100)

<i>Date</i>	<i>All Retail Stores</i>	<i>Durable Goods Stores</i>	<i>Non-Durable Goods Stores</i>
June 1939	100.0	100.0	100.0
December 1939	106.8	113.5	104.7
June 1940	109.9	116.3	107.9
December 1940	116.5	138.7	109.3
June 1941	129.1	153.0	121.3
December 1941	129.4	126.4	130.4
June 1942	131.3	92.9	143.9
December 1942	137.1	89.1	152.8

<sup>a</sup> Based on Bureau of Foreign and Domestic Commerce, *Survey of Current Business*, August 1942, Table 15, and May 1943, p. S-7.

price rises seem to have been greater for those elements in the cost of living for which payments in currency are most important. On the average, prices of food and clothing, for example, rose considerably more than rents. Between June 1939 and the end of 1942, while the cost of living as a whole was rising by 22 percent, the price of food entering into the cost of living index rose 42 percent.

The combined effect of both price increases and the volume of goods traded is reflected in the trend of sales of stores operating largely on a currency basis as compared with those whose business is less exclusively of this type. From June 1939 to the end of 1942,<sup>21</sup> while the sales of all retail

<sup>21</sup> *Survey of Current Business*. Daily average indexes adjusted for seasonal variation.

stores rose 37 percent the sales of a group of establishments of the sort where payment is ordinarily made in currency rose as follows:

Drug stores	67%
Chain drug stores	52
Eating and drinking places	90
Food stores	61
Chain grocery stores	55

Payments for services which are normally conducted by means of currency have also expanded considerably. Between the middle of 1939 and the end of 1942, passenger revenues of Class I railroads rose by 210 percent. Large increases in revenue were experienced by restaurants and by movie theaters and other places of amusement.

Along with the relative shifts in types of expenditures have gone certain closely related modifications in the methods of payment. Restrictions have been imposed on various forms of consumer credit. The shift away from many lines of durable goods trade has involved an automatic contraction of credit, since credit ordinarily figures prominently in the marketing of durable goods. The diminishing relative importance of credit in retail trade became particularly marked during 1942. Where cash sales are calculated to have represented a monthly average of about 48 percent of department store sales in 1941, they rose to 61 percent at the end of 1942, and for the year as a whole amounted to a monthly average of 55 percent.<sup>22</sup>

The expansion of circulating medium in general and of currency in particular appears, then, as a highly understandable corollary of the social and economic changes that accompany war.<sup>23</sup> Conspicuous among these changes have been a substantial increase in civilian and military employment, a growth in the volume of production and trade, a rise in commodity prices and of income payments, a change in the character of trade and the methods of effecting payment. Some of these changes may have been exaggerated by the very increase in circulating medium itself; but all are directly and some are inseparably connected with the fact that we are a nation at war.

<sup>22</sup> *Federal Reserve Bulletins*. The cash sales referred to include checks as well as currency transactions so that the increase cannot be said to have entailed an equivalent increase in the use of currency. On the other hand, not all charge accounts and deferred payments are met by check.

• While it is probable that the figure for cash sales overstates to some extent the absolute magnitude of currency transactions, it clearly indicates an increase in the use of currency.

<sup>23</sup> Other factors than those mentioned here may also have contributed to the greater increase of currency than of deposits. It is frequently said, for example, that currency is being widely used for small savings and that considerable amounts of cash are held in this form to facilitate evasion of taxes. The extensive use of currency for such purposes is obviously difficult to prove and still more difficult to measure.

## ALTERNATIVE METHODS OF MONETARY EXPANSION

An expansion in the circulating medium may come about by a variety of means. In addition to the problems raised by the increase in circulation itself, therefore, there are further problems relating to the advantages or disadvantages of the methods used to produce the expansion. In the case of some of these possible methods the issue is sufficiently current, or recurrent, to warrant further examination. It may be remarked at the outset that the following analysis of the characteristics of different methods of financing, all of which are expansionist, does not imply an endorsement of any one of them.

### *Borrowing from Banks vs. the Issue of "Greenbacks"*

At times like the present, proposals invariably appear for reducing the costs of war by dispensing with the payment of interest. In its more sophisticated form the argument runs along the following lines: if it is possible to borrow from banks at interest and let them manufacture non-interest-bearing debt in the form of demand deposits which serve as circulating medium, why should not the government manufacture circulating non-interest-bearing debt—such as greenbacks—directly, thus saving the cost of the interest charge? In view of the persistence of the question, it is worth examining a few of the possible consequences should the government issue a large quantity of greenbacks instead of borrowing a similar amount from banks.

In the case of Treasury borrowing from banks, demand deposits are customarily created and placed at the disposal of the government. If the government were to issue greenbacks and place the newly printed currency to the credit of its deposit accounts, the effect would likewise be to expand deposits but the banks would have added cash instead of bonds to their assets. If, on the other hand, the government were to pay out the greenbacks directly, the recipients of these payments might use the bulk of the proceeds to expand their deposit balances with banks. This would be in keeping with the custom of making the largest share of payments by check, a long-established preference which the issue of additional paper money would not necessarily alter. Thus the final composition of the circulating medium might be much the same whether the initial expansion took the form of deposits or currency.

It might, perhaps, be supposed that the greenbacks would remain in circulation and would circulate at a greater speed than a similar volume of demand deposits. This is by no means certain. In the first place, the greenbacks, as has been remarked, might chiefly enter into use not as currency but as the source of additional deposits; and in the second place, currency ordinarily circulates more slowly than deposits. Nor would the entire issue

necessarily be a net addition: a part of the greenbacks might simply take the place of the expansion of Federal Reserve notes that is occurring under present methods of financing.

The issue of paper money, then, might serve to expand demand deposits in much the same way as is now being done by direct Treasury borrowing from banks. Why is it generally believed that the former would be so much more inflationary than the latter? The reasons most commonly advanced are that the issue of greenbacks would destroy public confidence and contribute to further inflation by, for example, interfering with the sale of war savings bonds, stimulating panic buying, and fostering political abuses of all sorts. The exact inflationary effects of any printing of paper cannot be told in advance, for the reason that mass behavior is highly unpredictable at any given time.

A further reason for believing that the issue of paper money would be more inflationary than the direct borrowing from the banks, while less familiar than the other, rests on the difference in the effect of the two methods of expansion upon the position of bank assets in general and bank reserves in particular. If the issue of greenbacks served to expand deposits, reserves would be increased by an approximately equal amount so that the ratio of reserves to deposits would rise. In other words, excess reserves would be greatly expanded. Borrowing from banks, by expanding deposits but not reserves, has just the opposite tendency; excess reserves are decreased.

The potentialities present in such a situation may be illustrated by supposing that instead of borrowing \$18 billion from member banks in the year following Pearl Harbor, the government had issued \$18 billion of greenbacks. Let us assume that \$4 billion of this took the place of the expansion that occurred in Federal Reserve notes in circulation. If we assume, in accordance with the reasoning suggested above, that all the remainder were used to expand demand deposits, this would mean that member bank reserves would have increased by \$14 billion instead of by \$758 million as was actually the case. Under these circumstances the Reserve authorities would have faced a problem not of having to create more credit, but of having to absorb a vastly increased supply of credit. In December 1942 excess reserves would have come to \$14.6 billion. Such a huge volume of excess reserves could be highly disruptive of conditions in the money market and seriously inflationary in its possibilities.

#### *Borrow-and-Buy vs. Direct Borrowing from Banks*

A more pressing issue exists in connection with the way in which bank credit is brought into play in the purchase of government securities. During

the last war extensive use was made of private borrowing from banks as a means of obtaining funds with which to subscribe to government bonds, the bonds themselves serving as security for the loans.<sup>24</sup> This resulted in the creation of demand deposits payable to individuals and turned over by them to the government. Present policies of war financing result in the creation of deposits which are placed directly at the disposal of the government.

Following the last war the policy of borrow-and-buy came into thorough-going disrepute. Rightly or wrongly, it was given a considerable share of responsibility for the rise in prices that occurred at that time. So completely was it discredited that no great effort has been made to revive it in the present emergency. The principal objection advanced against borrow-and-buy was that it involved an increase in circulating medium in the form of bank deposits.<sup>25</sup> The validity of this objection may be challenged at the present time when the alternative, borrowing directly from banks, is similarly expansionist in character.

A given amount of borrowing from banks will presumably result in the same increase in bank credit under either method of financing; the inflationary tendency at the time of borrowing may therefore be assumed to be the same. With borrow-and-buy, however, the participation of the public would be broadened and the net obligation on securities so acquired would tend ultimately to be transferred from the banks to the public. This would operate to contract the volume of deposits as loans secured in this way were paid off. In effect, the policy of borrow-and-buy would permit individuals to pay for bonds out of income on an instalment basis.

It has been suggested that the opportunity to borrow in order to buy might reduce the incentive to save in order to buy; but during the last war it was maintained that the effect of borrowing to buy was to make people work harder and save more, because savings were pledged and invested before they were accumulated. In fact, it was said that the public tended to overestimate the amount they could save and thereafter were under strong pressure to fulfill the commitments they had made in a rush of patriotic enthusiasm.

Thus, there are inflationary dangers associated with both a borrow-and-buy program and the policy of direct borrowing from banks. Likewise the methods employed to hold inflation within bounds—taxation, borrowing out of income, rationing, price controls—would presumably be equally effective, or ineffective, against credit inflation originating in borrow-and-buy.

<sup>24</sup> In addition to credit extended in this way, a considerably larger total was advanced to industry directly from 1917 to 1919 than was provided by loans on the collateral of government bonds.

<sup>25</sup> Further aspects of the problem, which bear particularly on bank operations, will be treated in a later study in this series.



### *Treasury Borrowing from Federal Reserve Banks*

At various times in recent months the proposal has been advanced to allow the Treasury to borrow directly from the Federal Reserve Banks. In support of this suggestion it was argued that necessary financial operations could be carried through at smaller cost and with less disturbance to the market. In opposition, the proposal was condemned as virtually on a par with the issue of paper currency, with extreme inflation as its inevitable consequence. When the issue came before Congress the Federal Reserve Banks were given authority under certain conditions to lend directly to the Treasury up to a total of \$5 billion.

It needs to be observed that this method of financing, like that now followed, would lead to a growth of commercial bank deposits as the Treasury disbursed the credits established with the Federal Reserve Banks. It would have the additional effect, however, of increasing member bank reserves. The same result of loading the Reserve Banks with government securities, which opponents of the proposal feared, could be brought about by Federal Reserve purchases in the open market. To suppose that this would be practicable in the one situation and not in the other requires the arbitrary assumption that the Reserve authorities would be subservient to the Treasury if purchases were direct, and independent if they had to be made in the open market.

Direct borrowing from the Reserve Banks would resemble the issue of paper money in that both the reserves and the deposits of member banks would be increased, leading to a marked expansion in excess reserves. It would be more inflationary than borrowing from commercial banks since the latter method, although it increases deposits, also reduces excess reserves.<sup>26</sup>

A further objection advanced by opponents of the proposal was that direct sale prevents a market testing of particular issues. The advocates of the proposal, however, question whether any effective testing of government credit is possible under wartime controls.

It may be remarked in summary that methods of monetary expansion cannot be evaluated solely in terms of the volume of circulating medium, the reserve position of banks, or other quantitative factors. To a great many people, the possibility that a departure from familiar methods of financing might destroy public confidence or lead to political abuse appears more menacing than any purely quantitative consideration. Nor is this judgment

<sup>26</sup> As was pointed out earlier, reserves can hardly be considered a serious check on deposit expansion under wartime conditions. See the annual report of the Bank for International Settlements for 1941-42, pp. 13-14. On the basis chiefly of European experience, this report classifies borrowing from the central bank as the most inflationary method of war finance.

appreciably altered by a recognition that existing methods may themselves be highly expansionist. The importance customarily attached to subjective interpretations helps to explain why the quantitative factors mentioned above have generally been given so little emphasis.

#### MONETARY EXPANSION AND THE PROBLEM OF INFLATION<sup>27</sup>

A sudden and pronounced increase in the volume of circulating medium always gives rise to the fear of inflation. It has become customary to discuss the problem of inflation in the present war, however, not in terms of the quantity of money but of incomes and expenditures, or more especially, of consumer incomes in relation to the supply of consumer goods and services. The explanation, briefly, is that enlarged expenditures by the government lead to an expansion of incomes but, because they are directed toward the production of war materials, do not lead to a corresponding increase in the supply of goods and services available for purchases by the public. The result is the emergence of a so-called inflationary gap, an excess of potential demand over potential supply. The former is represented by consumer income and the latter by consumer goods and services available at the prevailing level of prices.

#### *The Bases of Inflation*

The question here is how the growth of circulating medium is related to this familiar explanation of the causes of inflation. The relationship would seem to rest principally on two considerations. In the first place, when funds disbursed by the government are obtained by borrowing newly created deposits from banks, there is no offsetting reduction in total means of payment at the disposal of the public. Consequently expenditures by the public are presumably larger than they would be if the government had acquired the sums it spends by taxation or borrowing out of income. In the second place, the increase in total circulating medium maintains the stream of income and expenditure in an inflated condition through subsequent exchanges. Thus the expansionist effect persists: the continued growth of circulating medium contributes to a sustained rise in income.

It is often implied that taxation or borrowing from the public will reduce

<sup>27</sup> Note by Clarence Heer, Director: For the benefit of those readers who are not acquainted with the plan of this series, it should be emphasized that this paper is primarily a study of war-time changes in the volume of currency and deposits and their relation to the problem of inflation. This restriction in scope is partly because of limitations of space and partly because plans call for the treatment elsewhere of other aspects of the problem of war finance. Any appearance of over-emphasis or omission that may result from this arbitrary division of subject matter will, it is hoped, be remedied through the publication of other papers in the series.

the inflationary potential by an amount equal to the income absorbed by these means. This conclusion involves the implicit assumption that sums collected from the public are taken out of what would otherwise have been spent for consumption. If, instead of reducing consumption by the full amount collected by the government, the public cuts down on its savings, the inflationary gap is reduced by something less than the amount transferred to the government. The net effect of taxation, compulsory savings, and borrowing out of income is influenced by any repercussions they may have upon total income and on consumption and private investment.

The description of the inflationary gap as frequently presented is open to the further objection that it assumes that any excess of income over civilian supply which is not drained off by such means as taxation and borrowing will necessarily be spent, and therefore operate to raise the level of prices. In making this assumption, it identifies potential demand (the total of retained income) with actual demand (expenditures) for consumer goods and services. No such identity as this assumes is admissible.

In recent months the public has held larger amounts of cash idle instead of employing all of the excess of income to compete for the scarce supply of goods. To a considerable extent people have been prevented, as by "freezing" and rationing, from spending their income for the goods they would be willing to buy. Potential demand may be restricted either by the removal of income through borrowing and taxing or by its immobilization. The latter may result from compulsion, as in the case of general rationing, or from voluntary choice, as when income receivers prefer to hold money rather than spend it for goods that are available. Both the reduction of retained income and the immobilization of that which is retained operates to restrain the upward drive of prices. Viewed in this light, hoarding of money may be regarded as an anti-inflationary influence, as long, that is, as the funds remain idle.

The latter qualification brings out one of the main difficulties in the present situation. As long as the building up of idle cash balances continues, this serves to restrain inflation. By operating to reduce consumer expenditures below the total of retained consumer income it helps to bring the level of effective demand down toward the level of available supply. But with a change in circumstances or expectations such as might attend the cessation of war, cash balances now idle might become active. In that case expenditures could proceed at a rate in excess of current net income. The effect might be to accentuate any inflationary tendency then existing and thus to aggravate an upward movement of prices; under opposite conditions it might serve to resist a downward movement.

The potentialities inherent in a large volume of idle balances constitute

a dynamic element of considerable significance, while the possibility of exercising some degree of control over this latent force represents an important strategic problem in the battle against inflation. At present the chief means of influencing these liquid funds are rationing and other forms of direct economic control. To the extent that we are able to check inflation, we may succeed in evolving techniques that will be useful later in coping with problems of deflation.

Like so many other economic phenomena, the accumulation of idle balances is to be judged only in the light of its alternatives and the conditions within which it takes place. During the 1930's it was viewed with distinct disfavor since expenditures at that time were inadequate for the attainment of full employment. Today circumstances are very different: instead of concern over a lack of spending there is fear of too great spending. While hoarding fails to contribute to the war effort as would the lending of the hoarded funds to the government, it is clearly free from the immediate inflationary dangers involved in the competition of funds for a dwindling store of consumer goods. The significance of these large idle balances in the period after the war will depend to a great extent upon the future course of consumer income and civilian supply. It is likely, however, that for some time after the war the task of preventing the sudden release of these reserves of purchasing power will be one of the major problems of monetary and fiscal policy.

### *Characteristics of Recent Price Behavior*<sup>28</sup>

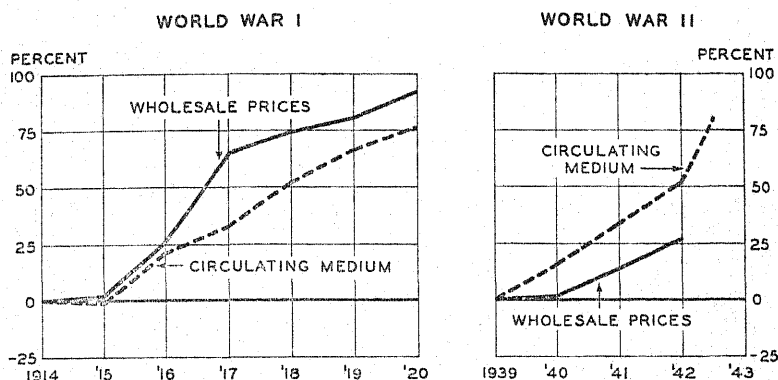
An increase in the volume of circulating medium is of most general concern in relation to changes in the structure of prices. At one time it was commonly accepted that the sole and certain cause of price inflation was an undue expansion of the circulating medium. While there is less agreement now than formerly as to the exact relationship between a change in circulating medium and a change in prices, the existence of a connection between the two phenomena is generally accepted. A comparison of changes in circulation and in wholesale prices is presented in Chart 4, which shows movements that occurred between June 1939 and December 1942 as well as during the period of the first World War.

In both war periods the volume of circulating medium and the level of wholesale prices moved upward. The two periods are, nevertheless, in sharp contrast. Despite a relatively greater expansion in the circulating medium during the present war, the rise in the index of wholesale prices has

<sup>28</sup> It should be borne in mind that indexes measuring price changes are less representative in wartime. This is true for the wholesale price index as well as for the cost of living index. Comparisons involving war years are therefore less exact than those for periods of peace.

# CHART 4—WHOLESALE PRICES AND THE CIRCULATING MEDIUM, WORLD WARS I AND II <sup>a</sup>

(Cumulated Annual Percentage Increases)



<sup>a</sup> Based on *Federal Reserve Bulletin* and Board of Governors of the Federal Reserve System, *Banking Studies* (1941) Table 29. Dates are for June 30. The extension of the circulating medium curve for the period June to December 1942 may be subject to some distortion because of seasonal factors.

been much less than it was in the previous war period. During the last war prices increased more rapidly, part of the time much more rapidly, than the volume of circulating medium. In the present war wholesale prices have increased much less than the circulating medium.

The contrast between the two periods was particularly marked in the first year of the present war when the quantity of circulating medium increased substantially with relatively little change in prices. From 1940 on prices rose considerably even though they still lagged behind the increase in circulating medium. In both periods the correspondence between the growth of circulating medium and the rise in prices became greater as the war progressed, in the last war through a slowing down of the rate at which prices increased, and in this war through a speeding up of the rate relative to the growth in circulating medium.

A number of factors help to explain why prices have failed to rise by as much as might be expected in the light of the experience of the last war period or of the recent growth in circulating medium:

- a. The existence of a relatively large amount of unemployed capacity at the start of the present war

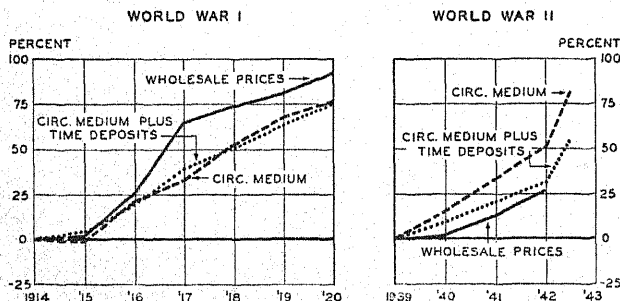
- b. Certain banking developments that have tended to retard the activity of demand deposits<sup>29</sup>
- c. Reduction in the volume of consumer and other types of credit
- d. Restrictions on spending, of which rationing is the most important
- e. Increase in the proportion of the circulating medium diverted to the use of the government.

It is important to recognize that some of these factors, which were very important earlier in this war, are of little or no significance at the present time. Only the last two seem now to be capable of substantial extension.

Because of the number and variety of independent and extraneous factors influencing the volume of both money and trade, the money supply, however this is defined, has lost whatever usefulness it may once have possessed as an accurate guide to the behavior of commodity prices. This is not to deny that it is, nevertheless, an important factor in the determination of prices and the distribution of income.

The spread of price inflation through different sectors of the economy has not been uniform. Table 6 indicates the manner in which the upward push of prices was reflected in the cost of living in different cities throughout the country. From June 1939, the month chosen as a base, to Decem-

<sup>29</sup> Among these developments may be mentioned the imposition of higher service charges, the practice of requiring larger average balances for a given amount of services performed, and the elimination or limitation of time deposits by many banks. As a result of the latter change, a large volume of slow moving deposits that would otherwise appear as time deposits are now classified as demand deposits. As may be seen from the accompanying charts, the contrast shown in Chart 4 is not greatly modified when time deposits are added to the figures for circulating medium. The curve for the combined total is still appreciably below the price curve in the period of the last war, and above it for the present war. The principal change to be detected is that in the present period the index for circulating medium plus time deposits is somewhat closer to the price index than is the index for circulating medium alone.



In the last war the introduction of the Federal Reserve brought about changes within the banking system which were probably of a character to increase rather than reduce the activity of deposits. This would appear to have been the tendency of the improved system of clearing and collecting checks and possibly of the more efficient use of reserves.

TABLE 6—INDEXES OF COST OF LIVING AND OF PRINCIPAL COMPONENT ITEMS  
IN SELECTED CITIES, DECEMBER 1940, 1941, 1942 <sup>a</sup>  
(June 1939=100)

City	December 1940				December 1941				December 1942			
	Total Cost of Living	Food	Clothing	Rent	Total Cost of Living	Food	Clothing	Rent	Total Cost of Living	Food	Clothing	Rent
New England												
Boston	101.7	100.3	101.3	100.4	111.1	116.6	114.3	103.6	122.1	138.5	123.5	105.0
East												
New York	102.7	105.2	101.4	100.4	110.8	120.2	112.2	100.7	121.5	141.2	126.5	100.9
Washington, D.C.	101.2	103.2	101.6	100.0	111.2	120.9	118.8	101.1	120.8	141.8	129.6	100.1
South												
Birmingham	103.8	107.4	101.8	105.7	115.9	125.4	120.3	115.9	123.0	145.6	125.9	108.5
Houston	102.1	106.7	102.5	100.1	111.3	123.3	118.5	100.6	119.4	140.4	126.1	102.0
Middle West												
Detroit	101.8	103.7	101.0	100.5	113.8	120.7	116.1	108.8	122.5	142.6	126.0	105.9
Chicago	102.1	104.4	100.5	100.5	111.6	121.8	112.9	103.7	120.8	139.5	122.5	105.5
Minneapolis	102.1	104.6	101.9	100.8	110.5	116.2	115.8	101.8	119.1	134.8	127.0	102.6
West												
Denver	101.0	101.5	101.3	100.5	110.3	118.6	115.0	101.8	120.5	140.1	125.0	102.5
Pacific Coast												
Seattle	101.2	104.5	101.5	100.1	113.7	125.4	113.7	109.9	124.1	149.7	125.4	102.5
San Francisco	102.4	104.7	101.3	100.4	112.0	123.3	113.1	101.9	125.0	149.8	123.4	102.5
UNITED STATES	102.1	104.0	101.3	100.6	112.1	120.8	114.5	103.7	122.1	141.8	125.5	103.5

<sup>a</sup> Based on data from Bureau of Labor Statistics, *Monthly Labor Review*.

ber 1942 the cost of living for the entire United States rose by 22 percent but the rise for the selected cities shown in this table varied from a low of 19 percent to a high of 25 percent. While this difference is perhaps not extreme, the change that took place month by month was somewhat less even. Thus during a particular month when the reported rise in one of the cities was 3 percent, in another city there was a drop of nearly 1 percent. However, it is to be noted that these discrepancies tended to be overcome in the course of time.

For reasons not wholly attributable to monetary factors, very pronounced differences are to be detected in the behavior of the various elements entering into the computed cost of living. Without exception the greatest rise occurred in the cost of food and the smallest in rent. However, the increase in food costs was much greater in some states than in others. The cost of food in the Pacific Coast centers rose substantially more than the average for the country, and in Minneapolis considerably less than the average. Rents remained practically stable in some localities, notably New York and Washington. In other cities, among them Birmingham and Seattle, rents rose markedly until about the middle of 1942. At that time the ceiling imposed on rents by the OPA brought about a reaction which was very pronounced in these and certain other cities. Differences in the behavior of rents are more marked than in either clothing or food. In some instances, but by no means in all, these irregularities reflect differences in the relative level of rents at the beginning of the period. The rise in rents was not only less than that of either of the other major components of the cost of living but in addition was the least uniform among the different cities. The increase in cost of clothing showed the greatest degree of uniformity. Over the period as a whole, the greatest rise in price of clothing occurred in Washington, and the least in Chicago.

Regional differences in the way various prices have moved are probably influenced by such factors as the scale of defense expenditures, the movement of defense workers into some areas, and the transfer of Japanese truck farmers away from the West Coast. At any event, the irregularities in the pattern of price rise appear to bear little relation to these regional differences with respect to increases or decreases in the volume of circulating medium.

### *The Problem of Liquid Resources*

The increase in the volume of circulating medium constitutes one sector of the growth in liquid claims to which reference was made earlier. It is obvious that all this circulating medium belongs to someone. Even though a considerable part may temporarily be held more or less idle, there is nevertheless a larger volume of funds at the immediate disposal of the public.



These funds represent means of payment that could, granted certain conditions, be thrown on the market at any moment, thereby altering substantially the flow of expenditures and income.

In addition to liquid resources in this immediately disposable form, large groups of claims exist that are, nominally at least, quickly convertible into cash. These include a considerable variety of short-term obligations such as time deposits and various Treasury securities. The increase in total liquid resources during the calendar years 1940 to 1942 was \$72 billion, or nearly 77 percent of the amount in existence at the start of the period.

The major items included in this increase were demand deposits, currency, and government obligations. The growth in time deposits was negligible, amounting to only a little over a billion dollars as against nearly \$32 billion for currency and demand deposits and approximately \$39 billion for Treasury obligations. The increase in the amount of government securities held by individuals took the form chiefly of war savings bonds, while the increase in the amount held by business enterprises was principally in the form of tax notes and marketable securities.<sup>30</sup> Mutual savings banks and insurance companies bought chiefly longer-term issues, while about three-fifths of the acquisitions by non-financial corporations in the first two war loan drives were concentrated in one-year maturities. The liquid resources of the Treasury and federal agencies and trust funds rose approximately \$13 billion during the period, well over half of the increase being in currency and deposits and the rest in Treasury obligations, chiefly of the longer-term issues.

In the three calendar years 1940 to 1942, then, individuals became large holders of redeemable Treasury obligations and non-financial business enterprises became large holders of marketable Treasury securities, particularly those of relatively short maturities. Both groups added large amounts to their liquid resources in the form of currency and deposits. While the increase in liquid resources held by various government accounts was large relative to the amount held at the beginning of the period, their total was much smaller than that held by either of the other two categories of owners.

By far the largest part of the liquid resources belonging to individuals represents income receipts not spent on consumption, taxation, or long-term investment. This is conspicuously true of liquid resources in the form of war savings bonds. As was noted earlier, income retained in the form of idle balances does not exert any direct influence on prices. The existence of a large volume of obligations payable on demand (as in the case of demand

<sup>30</sup> Whether marketable Federal obligations should be viewed as liquid resources is somewhat open to question. They are included here on the grounds that they are so regarded by the holders and that it is the present policy of the Federal Reserve Banks to guarantee their liquidity.

deposits and war savings bonds) or after a short period of time (as in the case of time deposits and short-term Treasury obligations) inevitably raises the question, however, of the possibility of strain in case an exceptionally high proportion of the claims are liquidated at any given time. The basis for the present concern over these liquid claims lies in the clear fact that their volume is not only higher than ever before in our history, but is rapidly expanding.

Fear of the inflationary consequences of excessive liquid resources arises primarily out of the possibility that they may contribute to a sudden and abnormal increase in demand for commodities. The release into circulation of currency and deposits previously held idle would clearly add to the current demand for goods. The inflationary effects of this would be greatly aggravated if holders of time deposits, war savings bonds, and other short-term assets were to try to convert these claims into cash and the cash into goods.<sup>31</sup> This would, of course, place pressure upon the obligors because of the necessity of providing cash. A sudden cashing of liquid claims would presumably lead to a sharp increase in the rapidity of monetary circulation. And if the funds to meet the increased demand for cash were obtained by borrowing from the banks the effect would be to expand the volume of circulating medium.

If the expansionist possibilities of liquid balances were to materialize during a period of boom, as conceivably they might, they would operate to accentuate the boom and perhaps to induce inflation. If they were to occur during a period of unemployment, as is also conceivable, they would tend to promote recovery. It seems probable that the future effects of these liquid funds will depend in considerable part upon their distribution as, for example, between corporations and individuals or among groups with high or low incomes. While we know that substantial changes have occurred, our knowledge either of the present ownership of liquid assets or the probable behavior of different ownership groups is extremely limited. A further factor that may be expected to affect the future behavior of these liquid resources is the form in which they are held, e.g., whether as circulating medium, redeemable government obligations, or as short-term or long-term marketable securities.

The newest and at the same time one of the largest of the items constituting the group of liquid resources is war savings bonds. The fact that their redeemability on demand makes war savings bonds a close substitute for cash is presumably an important element in their attractiveness to in-

<sup>31</sup> The magnitude of this inflationary effect would depend on the volume of goods and services these accumulated liquid assets could command at the time of their conversion into goods. If the previous price rise had been very great the value, in real terms, of these accumulated savings might have shrunk very considerably, so that the inflationary effect would be small.

vestors. On the other hand, the redeemability feature raises a perplexing problem with respect to future government financing, since it implies that the Treasury may be called upon at any moment to obtain large sums of money with which to meet sudden increases in the demand for redemption. Large floating debts have been known in the past but never before has so large a debt been subject to payment on presentation. Indeed, the present case is highly exceptional since, apart from occasional issues of paper currency, governments have seldom made use of demand obligations.

The extent of the effect will depend, of course, not on the existence of the right of bondholders to demand cash but on the extent to which that right is exercised. The desire to convert into cash is not by any manner of means constant but is determined by conditions certain to vary from time to time. Among these conditions are the need for cash to maintain existing standards of living, as in the case of an increase in unemployment, the desire for cash to support a rise in living standards, and fear of a loss in the value of the monetary unit.

Future policy might be directed toward lessening the incentive to present bonds for redemption. A continuation or extension of the policy of rationing, for example, would reduce the desire of individuals to cash in their bonds through restricting their freedom to use the money they would get if they did so. Likewise, policies that would prevent unemployment would, at the same time, limit the demand for redemption by reducing the need of individuals to convert their liquid assets into cash.<sup>32</sup>

Probably the most significant consideration with respect to war savings

<sup>32</sup> It is necessary to avoid the temptation to digress on aspects of this subject which are fiscal rather than monetary in character. Certain points may, however, be noted briefly in passing. A period of unemployment with rising demand for redemption could have the curious effect of enabling the debt to be reduced at the expense of people who would otherwise be on relief. This would be the result if individuals were required to liquidate any war savings bonds they might own before becoming eligible for subsistence payments by the government. Even without a means test such as this presumes, many individuals would doubtless use up part or all of their savings in the form of government bonds before applying for relief. It is reasonably certain that any strain imposed upon the Treasury by demand for redemption in a period of rising unemployment would reduce in some degree the burden caused by the necessity of caring for people on relief.

A further aspect of the problem of redemption arises out of the provision for payment of interest on war savings bonds. These bonds, as is well known, bear no interest in case they are redeemed within a year of the date of issue and bear a very low rate if redeemed at any time up to five years. In case a bond is redeemed in one year or less, the net effect is that the Treasury has borrowed on short term without interest; if redemption takes place within six and a half years of issue the rate of interest is a little over 1 percent. While cost of handling may outweigh the saving on interest, it is nevertheless important to recognize this aspect of early redemption.

Finally, to the extent that the bonds are held to maturity the government is spared the necessity of making any interest payments until 10 years from date of issue. This deferment of interest charges is of obvious advantage to a country at war; it may help to offset other features of the bonds which are more open to objection.

bonds, and the feature that bears most closely upon problems of money supply and price movements, has to do with the effect of their ultimate repayment, whether by early redemption or otherwise. Much of the recent literature on fiscal policy and particularly on deficit financing assumes that an expansion in government debt tends to be inflationary and a reduction to be deflationary. Some writers have gone so far as to conclude that any substantial reduction in national debt is virtually precluded because of the deflationary consequences that could be expected to follow. This reasoning is based on two principal assumptions, first, that repayment of debt held by the banks would tend toward the destruction of demand deposits and, secondly, that it would restrict consumer expenditures. In the case of war savings bonds, which are held chiefly by people in the lower-income brackets, neither of these assumptions can be accepted as valid. Discharge of these obligations would entail no destruction of demand deposits, such as would follow payment of debt held by banks; and a transfer of funds, such as would occur if they were paid out of taxation, would largely be to individuals with a high propensity to consume so that the effect would probably be expansionist.<sup>33</sup> With respect to war savings bonds, then, there is considerably less danger than has frequently been alleged that a postwar reduction of government debt would exert a depressive influence. It might, in fact, have the opposite effect. The spenders-for-recovery and the orthodox budget-balancers may be able, through the medium of war savings bonds, to meet on common ground.

In this respect war savings bonds closely resemble the assets accumulated under a system of compulsory savings. One of the principal arguments advanced in support of compulsory savings is that they would provide a back-log of potential purchasing power for use in the event of a postwar decline in business. The same end may be served by war savings bonds.

#### IN CONCLUSION

The increase in circulating medium that has occurred in recent years raises questions as to the future of Federal Reserve policy.<sup>34</sup> The growth in circulation means that the Reserve System, in pursuing policies designed to influence the volume of credit, would have to conduct operations on a much larger scale in order to effect the same relative change in bank credit outstanding. If in the meantime changes had been introduced in reserve require-

<sup>33</sup> Because of the relatively high propensity to consume of holders of war savings bonds, the general effect of their redemption is likely to be expansionist under any circumstances. If the funds for redemption were obtained by new borrowing from banks the effect would be especially so.

<sup>34</sup> The effects of the war on the Federal Reserve System will be discussed in detail in a companion study in this series.

ments or larger excess reserves had become customary, the difference in scale of operations would not necessarily be proportionate, however, to the growth that has occurred in circulating medium.

At the same time, recent changes in bank portfolios have impaired the effectiveness of some of the most familiar instruments of credit policy. This is particularly apparent with respect to the possibility of restricting credit by the sale of securities in the open market. The magnitude of their holdings of government securities renders banks very sensitive to any decline in security prices. The possibility that sales by the Federal Reserve might, under certain conditions, depress the value of government securities (and thereby weaken confidence in banks or even precipitate a panicky unloading of bonds by banks) may appear sufficiently serious to deter the Reserve Banks from making extended use of open market sales in the future.

The importance of this consideration is heightened by the fact that Federal Reserve Banks have likewise acquired large amounts of government obligations. At the end of 1942 government obligations constituted 93 percent of the portfolio of the Reserve Banks. At the end of 1918, on the other hand, they represented only 13 percent, while bills discounted or purchased amounted to 87 percent.<sup>35</sup> With assets of the latter type, contraction of credit can be exerted without the same depressing effect on bond prices that might accompany the sale of long-term securities in the open market.

The existence of excess reserves during recent years complicated the problem of credit control by the Federal Reserve. While excess reserves have not entirely disappeared, the practical problem since the spring of 1942 has not been to combat an excess, but to provide additional reserves as needed to facilitate the Treasury's program of war financing. Despite the temporary respite thus afforded, it is not to be assumed that the problem of excess reserves has been permanently solved.

The increased volume of currency in circulation in recent years has been largely influenced by developments associated with the war effort, such as the expansion of defense industries, the growth of armed forces, and restrictions on durable consumer goods. With a return of economic life to peacetime channels, a reversal of these influences is to be anticipated. Unless counteracting forces come into play the result would presumably be a retirement of some of the currency now in circulation. At one time such a movement of currency would have been offset, in part at least, by the repayment of member bank indebtedness to the Reserve Bank, but today such indebtedness is of negligible proportions. Barring a further large ex-

<sup>35</sup> The policy of not holding government bonds was concurred in by the Treasury as the following statement from the Annual Report of the Secretary of the Treasury for 1919 (p. 101) indicates: "The Federal Reserve Banks . . . very properly abstained from directly investing their funds in Government war securities."

pansion in bank credit, therefore, a return flow of currency would have a tendency to cause a renewed growth of excess reserves.

One way of anticipating this possibility would be for the Federal Reserve Banks to hold chiefly short-term securities. If currency is paid into the Reserve Banks, holdings of short-term government obligations can then presumably be reduced by a corresponding amount, provided, of course, that the government either is not obliged to make new short-term loans or can obtain them from sources other than the Federal Reserve Banks. In recent months the proportion of short maturities in Federal Reserve portfolios has greatly increased. At the start of April 1942, the Federal Reserve Banks reported no Treasury bills or certificates. At the end of 1942, on the other hand, bills and certificates constituted 33 percent of total Reserve Bank holdings of government obligations and in the last week of May 1943, 56 percent. This shift in the character of Federal Reserve Bank portfolios would appear to have reduced to some extent the probable amount of future excess reserves. The running off of short-term Treasury obligations may help at some future time to facilitate adjustment to a smaller volume of circulating medium much as the repayment of member bank borrowing was once expected to do. It would do so without the same depressive effect upon the price of government bonds that might attend sales in the open market.

Probably the most important conclusion to be drawn from the analysis presented in this paper is that the methods of borrowing employed during the war will influence what the Treasury and the banks will be able to do in the postwar period. It is highly significant that borrowing by means of war savings bonds, for example, is non-inflationary while borrowing from banks tends, by bringing about an expansion of demand deposits, to be inflationary. It is also significant—and by no means as well recognized—that the repayment of these securities in the postwar period would have quite different effects. Likewise, the pattern of distribution of the federal debt as between long and short maturities, will determine what future Treasury action will prove feasible.

Moreover, the Reserve Bank policies that can be employed at all, or that can be used with reasonable chance of success, will depend on the policies—such as open market operations, lending on collateral, or changes in reserve requirements—that are adopted now. Similarly the policies followed by bankers today—whether they hold long or short maturities, whether they lend directly to the government or indirectly by means of collateral loans to customers, whether or not they lend directly to business—will influence their freedom to follow particular policies in the later period. The magnitude of their holdings of government securities is, in particular, a phenom-

enon of the greatest significance to both Reserve Banks and commercial banks.

Fiscal policy is construed much too narrowly if we think of it independently of the circumstances in which it is expected to operate. Not the least of these external circumstances is the volume of circulating medium. At times like the present attention is inevitably directed toward short-run effects of our financial policies. It is scarcely less important, however, to remember that the policies of today are setting the stage for the policies of tomorrow. This is true in the realm of fiscal policy; it applies also with respect to central bank policy and to the policies of individual banks. We are helping to determine today both what must be done at some future time and how it can be done.

#### ADDENDUM: Monetary Expansion to June 1943

At the time this paper was completed data on deposits and currency were not available in final form beyond December 1942. The purpose of the present note is to indicate the magnitude of the growth of deposits and currency during the first half of 1943. The total volume of circulating medium at the end of June 1943 may be estimated at approximately \$80 billion. The increase of 46 percent during the fiscal year was equal to approximately 75 percent of the total circulating medium outstanding in June 1939.

As the following summary shows, the increase in total circulating medium in the first half of 1943 appears to have been only a little over half as great as in the preceding six months.

	<i>Total June 30, 1943<sup>a</sup></i>	<i>Increase Fiscal Year<sup>a</sup></i>	<i>Increase July-Dec. 1942</i>	<i>Increase Jan.-June 1943<sup>a</sup></i>
	<i>(in billions)</i>			
Circulating medium	\$80.0	\$25.5	\$16.6	\$8.9
Currency	15.7	4.8	3.0	1.8
Demand deposits, adjusted	56.0	14.2	7.0	7.2
Government deposits	8.3	6.5	6.6	—0.1

<sup>a</sup> Estimated

Adjusted demand deposits increased about the same in each period while the increase in government deposits was exclusively in the first six months, a slight decrease occurring in the second six months. This was largely because government deposits were at a peak in December as a result of the first war

loan. It may be added that during the fiscal year 1942-43 time deposits increased by about \$2.7 billion to a total of \$30 billion. This increase, while small relative to the increase in circulating medium, compares with a net increase of only a half billion over the preceding three years. The increase in time deposits during the first half of 1943 was 50 percent greater than in the preceding half year.

The slower rate of growth in circulating medium in the second half of the fiscal year 1942-43 is partly the result of seasonal causes. A number of factors may be operating, however, to bring about a slower rate of growth, such as a reduction in the relative scale of Treasury borrowing from banks, a slackening in the rate of growth of industrial production, a slowing down in the expansion of the working population and the armed forces, and a decrease in the movement of American currency abroad for use of the military. The future course of monetary expansion, however, will be effected by many uncertain elements—the shaping up of military events, the success of price control measures, the fiscal policies of the government.



# National Bureau of Economic Research

---

## OFFICERS

W. L. CRUM, Chairman  
N. I. STONE, President  
C. REINOLD NOYES, Vice-President  
GEORGE B. ROBERTS, Treasurer  
W. J. CARSON, Executive Director  
MARTHA ANDERSON, Editor

## DIRECTORS AT LARGE

CHESTER I. BARNARD, *President, New Jersey Bell Telephone Company*  
DAVID FRIDAY, *Consulting Economist*  
OSWALD W. KNAUTH, *New York City*  
H. W. LAIDLER, *Executive Director, League for Industrial Democracy*  
SHEPARD MORGAN, *Vice-President, Chase National Bank*  
GEORGE B. ROBERTS, *Vice-President, National City Bank*  
BEARDSLEY RUMMLER, *Treasurer, R. H. Macy and Company*  
HARRY SCHERMAN, *President, Book-of-the-Month Club*  
GEORGE SOULE, *Director, The Labor Bureau, Inc.*  
N. I. STONE, *Consulting Economist*  
LEO WOLMAN, *Columbia University*

## DIRECTORS BY UNIVERSITY APPOINTMENT

E. W. BAKKE, <i>Yale</i>	GUY STANTON FORD, <i>Minnesota</i>
C. C. BALDERSTON, <i>Pennsylvania</i>	H. M. GROVES, <i>Wisconsin</i>
W. L. CRUM, <i>Harvard</i>	CLARENCE HEER, <i>North Carolina</i>
E. E. DAY, <i>Cornell</i>	WESLEY C. MITCHELL, <i>Columbia</i>
T. O. YNTEMA, <i>Chicago</i>	

## DIRECTORS APPOINTED BY OTHER ORGANIZATIONS

PERCIVAL F. BRUNDAGE, *American Institute of Accountants*  
BORIS SHISHKIN, *American Federation of Labor*  
C. REINOLD NOYES, *American Economic Association*  
W. I. MYERS, *American Farm Economic Association*  
FREDERICK C. MILLS, *American Statistical Association*

## RESEARCH STAFF

WESLEY C. MITCHELL, *Director*

MOSES ABRAMOVITZ	SIMON KUZNETS
ARTHUR F. BURNS	FREDERICK C. MILLS
SOLOMON FABRICANT	GEOFFREY H. MOORE
MILTON FRIEDMAN	RAYMOND J. SAULNIER
THOR HULTGREN	LEO WOLMAN

RALPH A. YOUNG

## Relation of the Directors to the Work of the National Bureau of Economic Research

---

1. The object of the National Bureau of Economic Research is to ascertain and to present to the public important economic facts and their interpretation in a scientific and impartial manner. The Board of Directors is charged with the responsibility of ensuring that the work of the Bureau is carried on in strict conformity with this object.

2. To this end the Board of Directors shall appoint one or more Directors of Research.

3. The Director or Directors of Research shall submit to the members of the Board, or to its Executive Committee, for their formal adoption, all specific proposals concerning researches to be instituted.

4. No report shall be published until the Director or Directors of Research shall have submitted to the Board a summary drawing attention to the character of the data and their utilization in the report, the nature and treatment of the problems involved, the main conclusions and such other information as in their opinion would serve to determine the suitability of the report for publication in accordance with the principles of the Bureau.

5. A copy of any manuscript proposed for publication shall also be submitted to each member of the Board. For each manuscript to be so submitted a special committee shall be appointed by the President, or at his designation by the Executive Director, consisting of three Directors selected as nearly as may be one from each general division of the Board. The names of the special manuscript committee shall be stated to each Director when the summary and report described in paragraph (4) are sent him. It shall be the duty of each member of the committee to read the manuscript. If each member of the special committee signifies his approval within thirty days, the manuscript may be published. If each member of the special committee has not signified his approval within thirty days of the transmittal of the report and manuscript, the Director of Research shall then notify each member of the Board, requesting approval or disapproval of publication, and thirty additional days shall be granted for this purpose. The manuscript shall then not be published unless at least a majority of the entire Board and a two-thirds majority of those members of the Board who shall have voted on the proposal within the time fixed for the receipt of votes on the publication proposed shall have approved.

6. No manuscript may be published, though approved by each member of the special committee, until forty-five days have elapsed from the transmittal of the summary and report. The interval is allowed for the receipt of any memorandum of dissent or reservation, together with a brief statement of his reasons, that any member may wish to express; and such memorandum of dissent or reservation shall be published with the manuscript if he so desires. Publication does not, however, imply that each member of the Board has read the manuscript, or that either members of the Board in general, or of the special committee, have passed upon its validity in every detail.

7. A copy of this resolution shall, unless otherwise determined by the Board, be printed in each copy of every National Bureau book.

## Financial Research Program: Committee

---

In the conduct of this and other studies under its program of research in finance the National Bureau of Economic Research has benefited from the advice and guidance of its Committee on Research in Finance. The functions of this committee are to review and supervise the specific research plans of the staff of the Financial Research Program.

RALPH A. YOUNG, *Chairman pro tempore* — University of Pennsylvania; Director, Financial Research Program

RAYMOND J. SAULNIER, *Secretary* — Barnard College, Columbia University; Research Staff, National Bureau of Economic Research

WILLIAM J. CARSON — University of Pennsylvania; Executive Director, National Bureau of Economic Research

DAVID FRIDAY — Consulting Economist; Director, National Bureau of Economic Research

E. A. GOLDENWEISER — Director, Division of Research and Statistics, Board of Governors of the Federal Reserve System

F. CYRIL JAMES — Principal and Vice-Chancellor, McGill University

WALTER L. MITCHELL, JR. — Director of Surveys, Research and Statistical Division, Dun & Bradstreet, Inc.

WESLEY C. MITCHELL — Columbia University; Director of Research, National Bureau of Economic Research

SHEPARD MORGAN — Vice-President, Chase National Bank; Director, National Bureau of Economic Research

WOODLIEF THOMAS — Assistant Director, Division of Research and Statistics, Board of Governors of the Federal Reserve System

DONALD S. THOMPSON — Chief, Division of Research and Statistics, Federal Deposit Insurance Corporation

ROBERT B. WARREN — Institute for Advanced Study

JOHN H. WILLIAMS — Dean, Littauer School, Harvard University; Vice-President, Federal Reserve Bank of New York

LEO WOLMAN — Columbia University; Research Staff, National Bureau of Economic Research

DONALD WOODWARD — Research Assistant to the President, Mutual Life Insurance Company of New York